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PENCIL POINTS

ECEMBER

1941

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Thin, for low cost, easy application, yet strong and durable for complete protection against infiltration of air and moisture. That's part of the story of Anaconda "Electro-Sheet" Copper, used here as concealed flashing around window frames.

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4195A

ANACONDA
from mine to consumer

The house shown here is in Central Islip, New York. The architect was Eugene Marten; the contractor, Harold McGowan. This "Electro-Sheet" is Copper-Armored Sisalkraft—made by The Sisalkraft Co., 205 West Wacker Drive, Chicago.

R. E. Anderson was the architect for this work in Wayne, Illinois. Herman Wendler was the contractor. This "Electro-Sheet" product is also Copper-Armored Sisalkraft.

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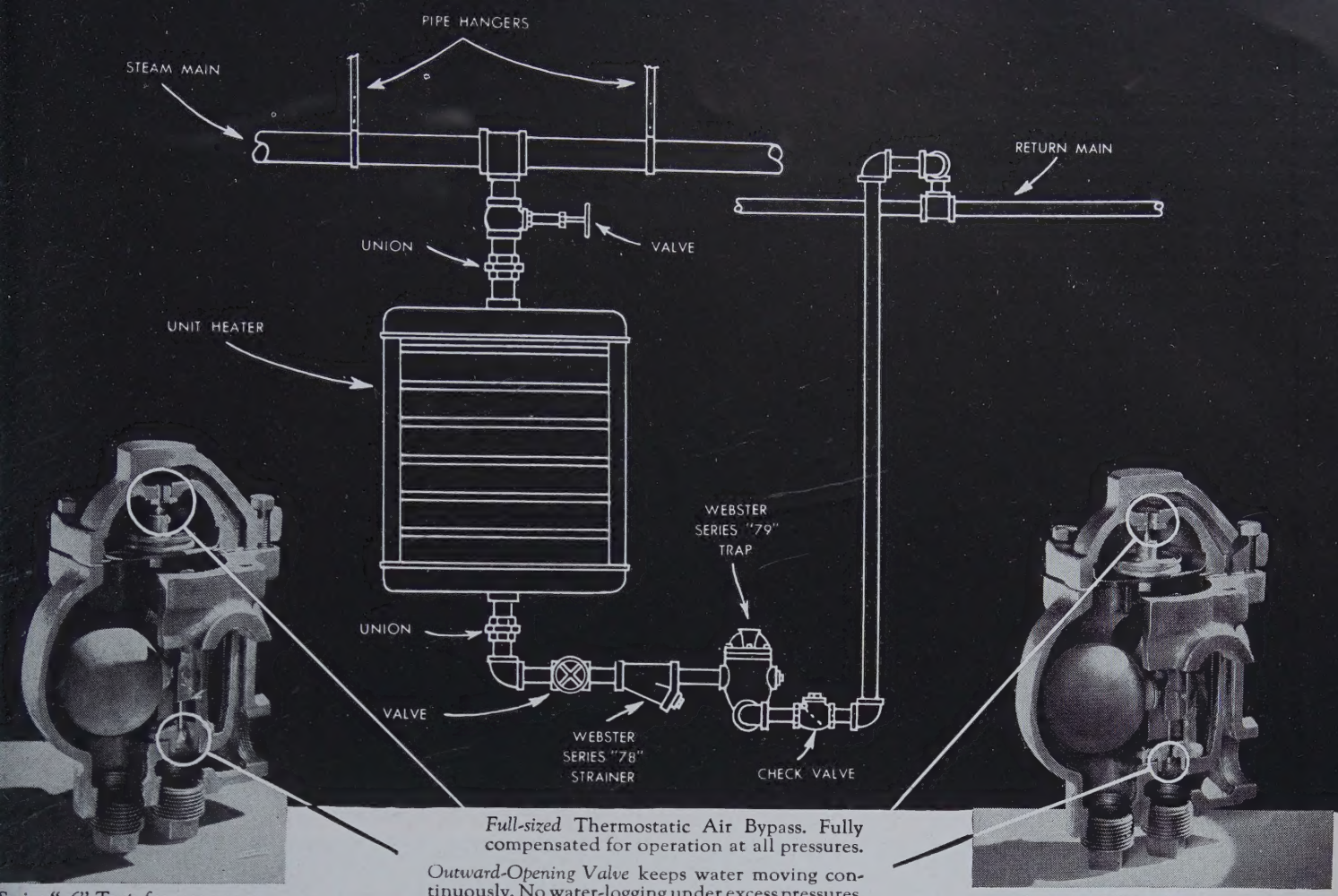
PENCIL POINTS, published monthly by Reinhold Publishing Corporation at East Stroudsburg, Pa. Publication office, East Stroudsburg, Pa. Editorial and Advertising Offices, 330 West 42nd Street, New York, N. Y. Yearly subscription $3.00, single copies 50 cents. Entered as second class matter, July 8, 1941, at the Post Office, East Stroudsburg, Pa., under the Act of March 3, 1879. Volume XXII, No. 12, Dated December, 1941.



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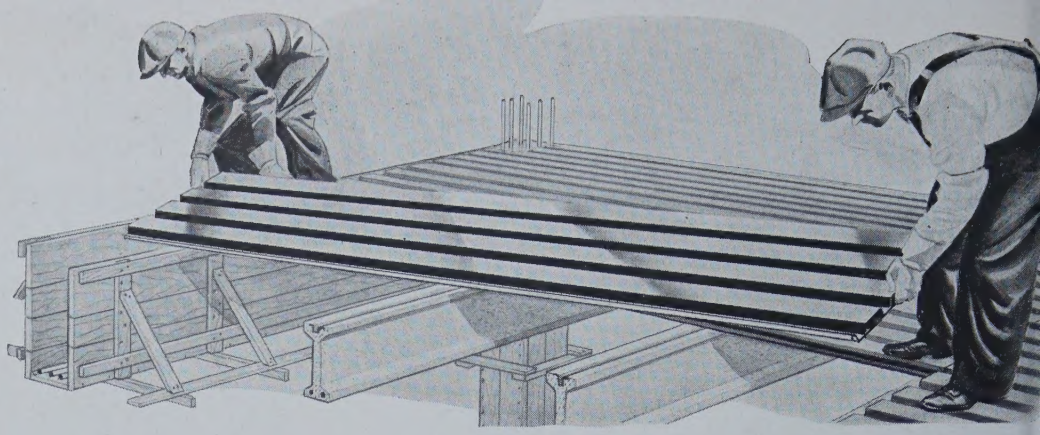
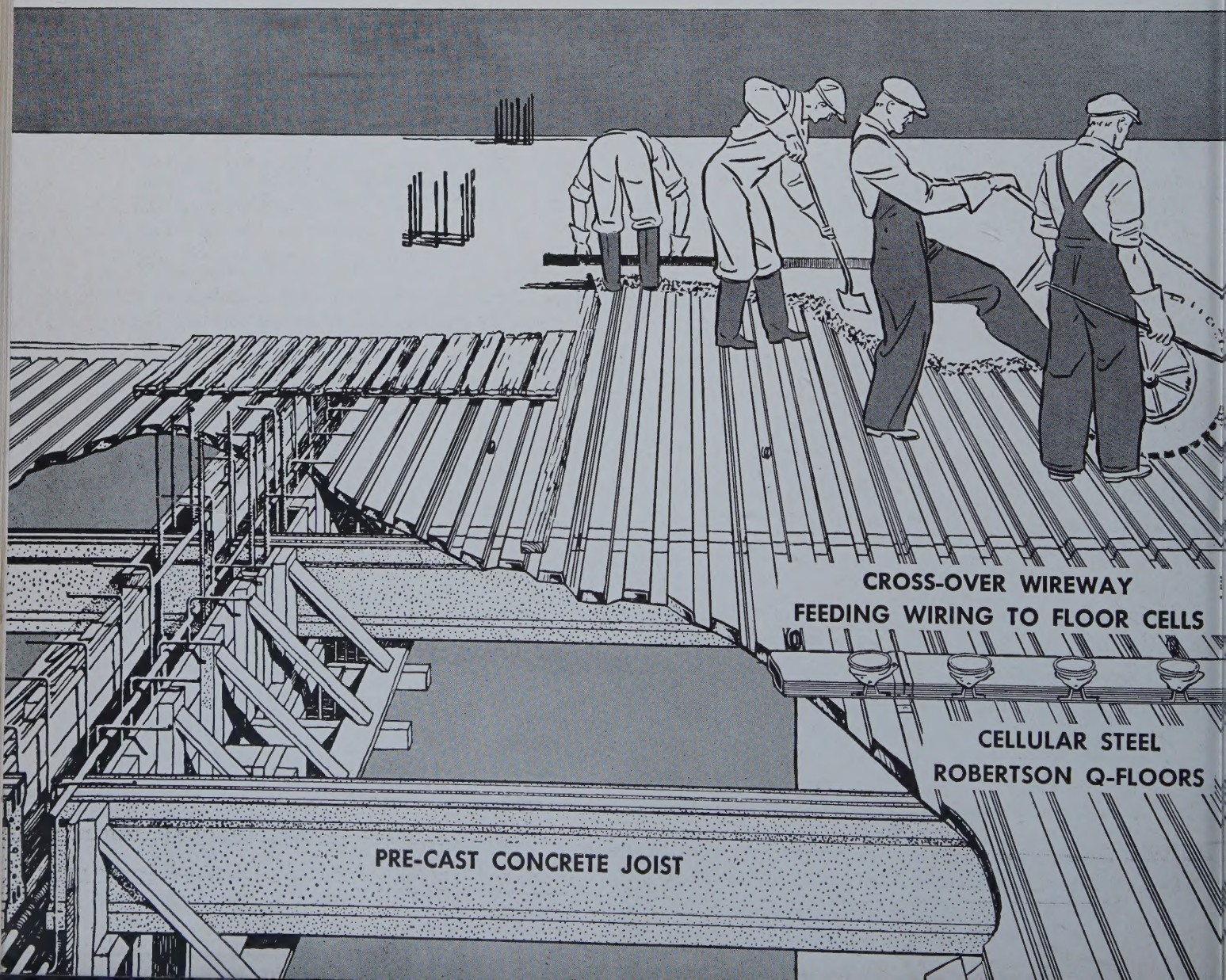
A 32-square foot unit of Q-Floor can be laid in 30 seconds. It is placed directly on steel beams, masonry walls or precast concrete joists. On the latter it is welded to bearing angles. These units immediately become safe, solid platforms upon which all building trades, masons, plasterers, plumbers, electricians and others, can work. 20% to 30% building time can be saved by the use of Q-Floors. Quicker completion of the job and quicker occupancy are assured.

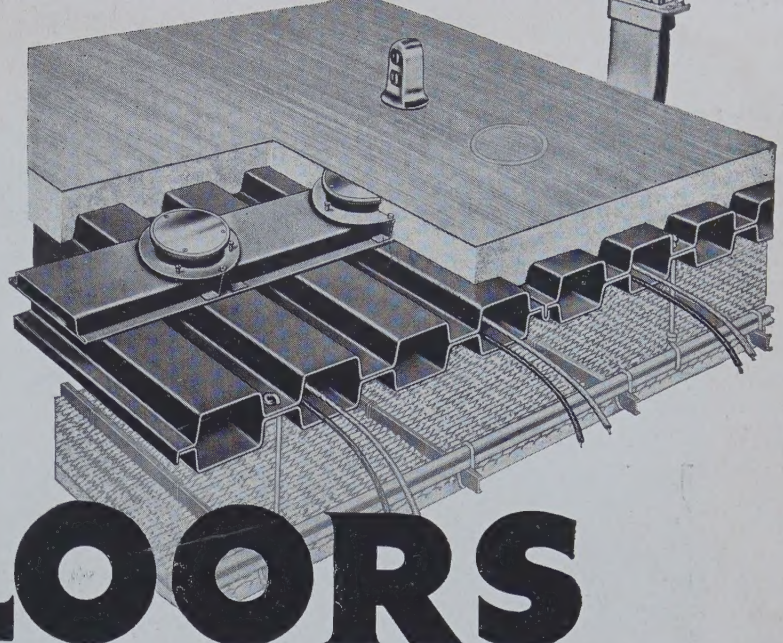


NOW QUICK-IN

CAN BE APPLIED TO A REINFORCED

SHOWING METHOD OF POURING CONCRETE FOR COLUMNS, GIRDERS, SPANDRELS AND



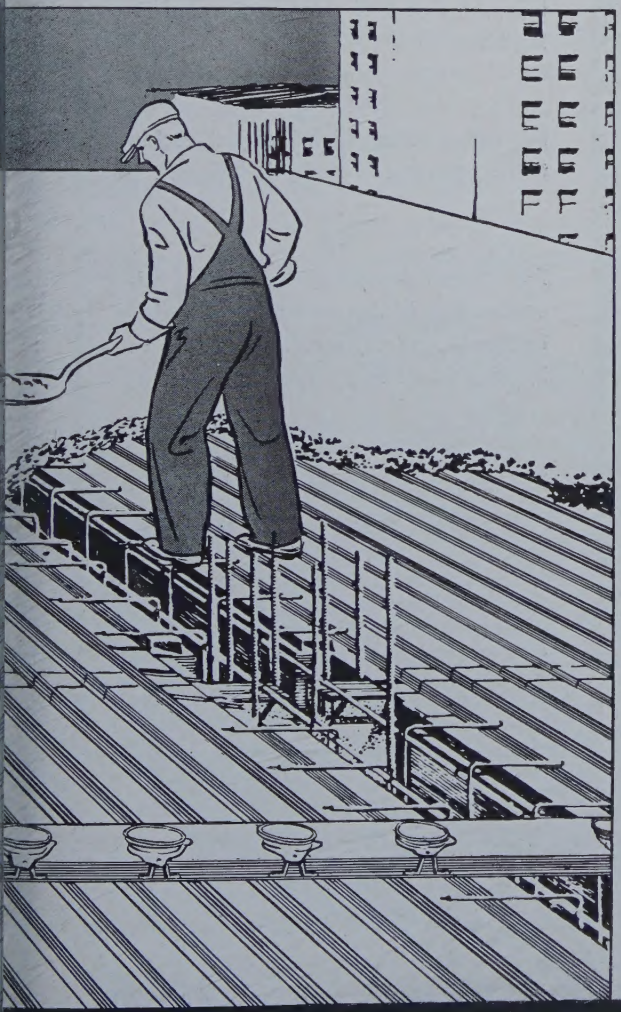


Here is a section of RK-type Q-Floor, showing the cellular steel construction which performs the double function of a structural sub-floor and a system of electrical wireways. The cross-over channel, with its handholes on multiples of six inches, permits easy installation of wiring in all wireways anywhere, at any time. The concrete fill over the top of the Q-Floor units and the suspended ceiling below are also shown. This construction has been given a four-hour fire rating by the Underwriters' Laboratories, Inc.

Q-FLOORS

CONCRETE STRUCTURAL FRAME

FLOOR FILL IN A SINGLE OPERATION



Through a new and unique method illustrated here, both the "quick installation" advantages and the "electrical availability" advantages of Q-Floors can be obtained with reinforced concrete structural frames. Q-Floors (UK-type shown at left) are laid as quickly on precast concrete joists as on steel beams and they immediately form safe and solid platforms upon which other trades can store materials, place scaffolding and carry on their work. Greater SPEED is the result!

By this method, all concrete used in the columns, girders, spandrels and floor fill can be poured in one operation. It is possible (1) to install the wood form work for columns and girders (2) place the precast concrete joists in position (3) install Q-Floor sections which provide for electrical underfloor wiring (4) install hangers for ceiling and mechanical systems (5) place the reinforcing steel . . . all before the concrete is poured. Shoring, except under poured beams and girders, is eliminated. This provides open areas in which various trades can work without obstruction. Fire hazards are reduced. More dry materials mean greater progress during unfavorable weather.

The PRECAST JOIST used is fabricated with two $1\frac{1}{2}$" x $1\frac{1}{2}$" x $\frac{3}{16}$" angles, back to back, in the compression flange of the joist. Angles are welded to steel diagonal shear bars. By installing these two angles in the precast joist during the process of manufacturing, it is possible to secure a straight smooth bearing surface with these angles. Joists are in turn set into the wood or steel form work for the girders. Q-Floor sections are then laid on the compression angles and screwed or welded to them. See details in illustration at left.

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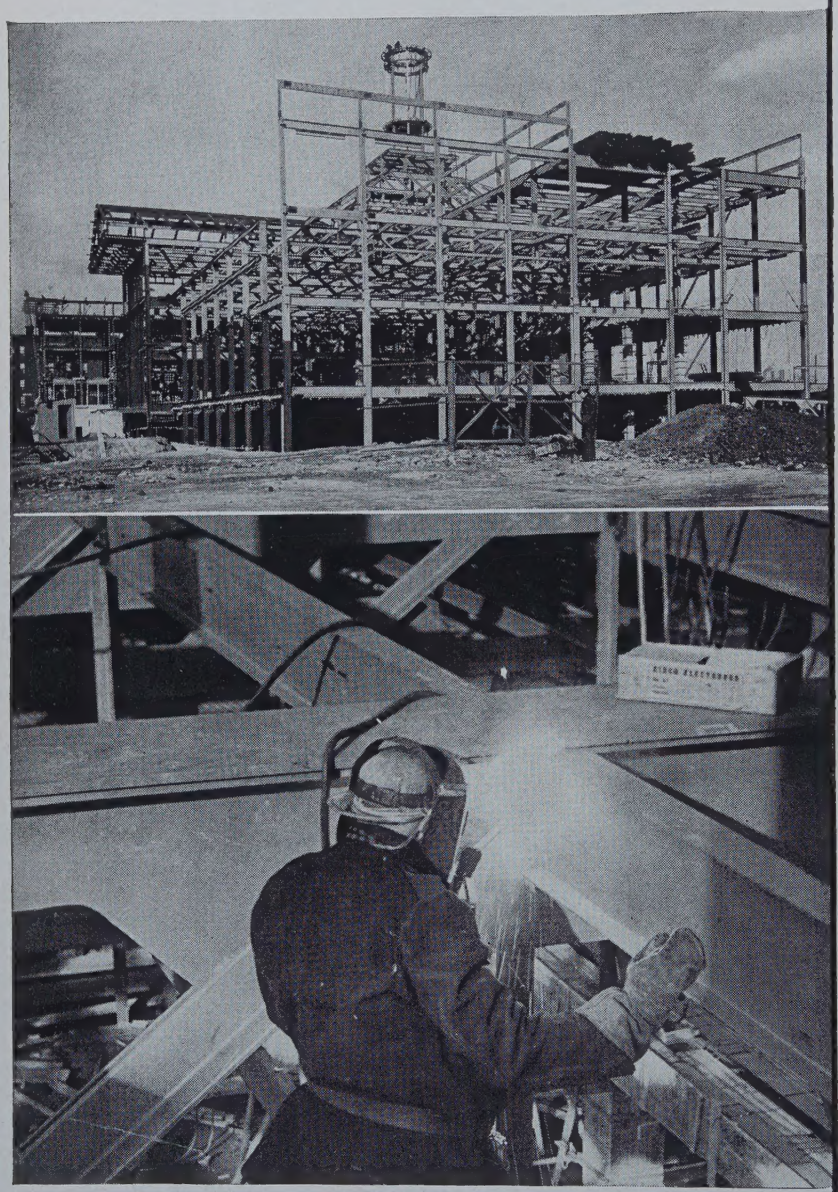

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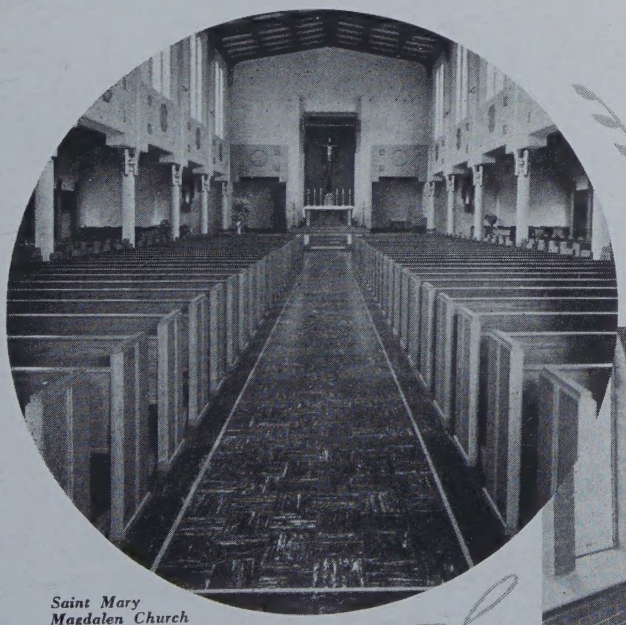

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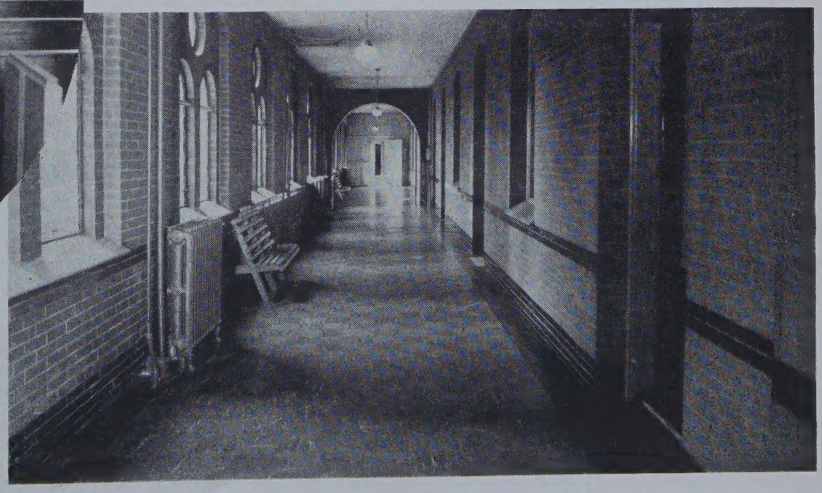

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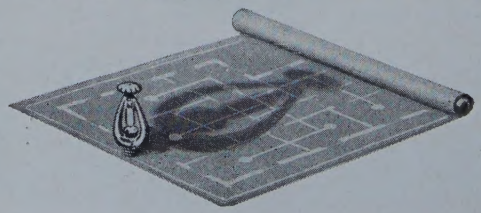

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THE THRESHING FLOOR

We are indebted to R. PENLEIGH BOYD, *editor of "Smudges" and "Lines," both published by the Architectural Students' Society of the Royal Victorian Institute of Architects, Melbourne, Australia, for the following interesting (and, we hope, not prophetic) comments on professional conditions in wartime Australia.*

As you probably hear very little of the state of the profession in this country, I thought you might be interested in some of the main effects of the war on Australian architecture.

About a year ago (a year or so after war was declared) a large number of defense projects were started, and materials and labor were still being squandered in one of the biggest booms in private building this State (Victoria) had ever seen. City office buildings, flats, and houses were springing up like mushrooms. In order to conserve the commodities, the Federal Government introduced building restrictions, in lieu of rationing which was considered too awkward to handle. A limit of £5000 was fixed for any private building. This caused many a frown in the larger private practices, but nobody worried very much because many large buildings were still in hand, and there was a general confidence that most of the defense program would be handed over to the private offices.

Today, however, the frowns have deepened. Restrictions have been tightened to a limit of £3000 on domestic work, and an average of £300 (according to a sliding scale) on luxury building. Still the big offices would have little to worry them if defense work was forthcoming, but somehow it is not. In spite of many deputations by Institute Councils and Building Societies to Canberra, the defense factories and hospitals still pour onto the boards of the Government architectural departments, which have stretched overnight to fantastic proportions.

The question today among draftsmen who may meet is not, "Whose office are you in now?," but "which department"?

The smaller private offices are crumbling pathetically; the large offices are shrinking rapidly. Two only are left in Melbourne with over ten draftsmen — these almost exclusively engaged on hospital work. The larger of these, Stevenson & Turner, with about twenty-five draftsmen, is responsible for the new Melbourne Hospital, largest building in Australia.

Defense housing is almost ignored, as you may have gathered from SMUDGES; small house building is the one branch of the trade in which the Government does not wish to discourage private enterprise. Here, however, the speculative and designing builder firmly holds the reins, his houses being about as poor as is usual, I imagine, from his race of any nationality. As to design as a whole in Australia I think, judging from your country's magazines, the standards are very similar.

Where you apparently have great tracts of Colonial boxes in the poorer suburbs, we have a repellant type of ornate brick "moderne" villa; infinite variations on a most depressing theme. I suppose you can guess the type of thing? Hipped roof, horizontal striped brick and stucco, horizontal glazing bars. Ironically enough, the standard of architects' design was just beginning to rise quite high, and several really fine buildings had emerged, when the restrictions came in.

I hope I have not bored you with these very incomplete notes, and indeed I hope that the facts are not new to you, for I should hate to find that our overseas publicity is as bad as I am almost sure it is.

DECEMBER, 1941

Another year's-end rolls around; another Christmas day whereon to turn our thoughts for a moment from the harsh external world into a spiritual atmosphere of good cheer and "peace-on-earth"; another New Beginning as men of good will promise themselves and each other that things will grow better in the next twelve-month because they will strive together to make them so! Readers, we greet you in friendship and wish you all the joys that go with the season and the fulfillment of your hopes.

THE EDITORS

The real cause for slums lies in lack of proper advance planning and proper supervision in the growth of communities, points out GEORGE A. BOEHM, *A.I.A. New York Chapter.*

Generally, it is the belief that the chief cause for the slum is the so-called industrialization of society. Undoubtedly there are localities where the growth of the slum can be traced to industrialization. However, there were slums in Rome, also, when industrialization, as we know it, was in but slight evidence. The real cause for the slum lies elsewhere. That *elsewhere* is the lack of proper planning, in advance, and the failure to insist upon and direct the growth of communities under a clear conception of what the physical environment must be to allow for the living of a full and completely healthful life, physically as well as spiritually.

Planning concerns itself not only with isolated houses, individual plots, single streets, or even a single neighborhood. It is a problem of planning for whole communities. This planning is one uniquely for the architect.

C. GODFREY POGGI, *Chairman of the Professional Practice Committee, Union County (New Jersey) Society of Architects, points out "What Fools These Mortals Be."*

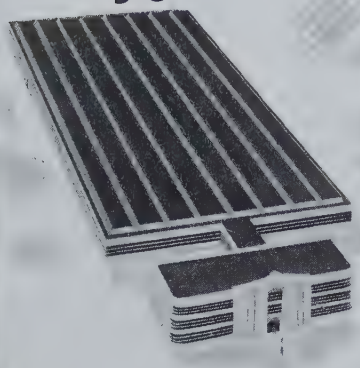
Now that private practice is again war blockaded, it would seem an opportune time to ponder the evil wrought by those responsible for the degradation of our profession whereby it has generally become a commercial racket and reduced many Architects to virtual penury.

This subject could well be dwelt upon at length, but due to lack of space it will here be confined to but one phase of the result of the abandonment of true ethical practice as originally set up by the A.I.A.

The FHA, for example, has loaned, since its inception, a total of $2,535,000,000 in 556,000 mortgages. Had the Architects adhered to first principles they would have reaped, at the rate of 6%, a total of $15,000,000, whereas they only performed partial service and derived the comparatively small sum of approximately $2,500,000, or a 1% fee, and lost $12,500,000.

(Continued on page 10)

PLANNING A RUSH JOB?



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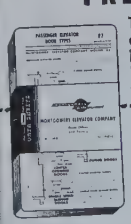

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ALLEN R. KRAMER, *a student at Cornell University, has been a regular contributor to the "Critical Youth" forum conducted in* PENCIL POINTS.

The problem of education is undoubtedly one of the most important of the many perplexing questions facing the profession today. It is not by any means confined to the education of professionals themselves. It concerns also the education of the public they (would like to) serve.

In general, the layman is almost completely unaware of the quality and the variety of services the competent architect has to offer. He knows nothing of such an architect's abilities as an organizer and administrator and often has but slight respect for his æsthetic judgment. At various times during the past few months I have heard otherwise well informed laymen refer to architects as designers, draftsmen, builders, and artists. Not one seemed to understand that an architect could be all these and more. The architect as a financial advisor on building was non-existent to them. Such a preposterous state of affairs exists for no other profession and its remedy lies only in education.

The public, like the late Will Rogers, "only knows what it sees in the papers." It has seen nothing of architects and architecture. The public's education must come in the form of advertising publicity. Surely advertising can not be considered below the dignity of a profession whose dignity is threatened with total extinction. Surely the urge to provide America with better building should be stronger than the tradition of the Ivory Tower.

The Ivory Tower has been shaken to its foundations by tremendous social and economic shocks. The profession must repair to a more stable, a more flexible, and a more prominent structure.

AT LARGE IN THE LIBRARY

CIVIL AIR DEFENSE *by Lieut. Col. Augustin M. Prentiss, U. S. A. Largely based on British government recommendations. (Published by McGraw-Hill Book Co. Inc., New York, $2.75).*

Colonel Prentiss's book is an unusual combination of history, technique, and prophecy. The history and prophecy come unexpectedly in a book which appears primarily intended as a set of rules of thumb, a sort of army manual for the immediate use of the civil defense army now being called out.

The technical information presented is very comprehensive. The book discusses the various instruments employed—explosive, incendiary, and gas—and their effects as recorded in data published in Europe, and goes on to describe in detail organizational and technical devices of protection which, for the most part, appear based on official British practice.

The fact that the author is an expert in chemical warfare becomes apparent as he develops this subject. His broad approach to the problem is admirable and touches the root of the whole matter of civilian defense. In a paragraph headed "Public Education" he says: "Full and free public discussion by *qualified experts* (author's italics) of the real powers and limitations of gas should be encouraged and widely disseminated by all forms of public presentation, such as the press, radio, and motion pictures."

Precisely, but should not this excellent suggestion embrace all other factors involved? Such a process would give an opportunity for qualified experts to assist the whole program of civilian defense *now*, when as Colonel Prentiss points out wisely elsewhere, "It is essential that passive defense plans should be formulated and put into effect in time of peace."

The chapter dealing with the protection of industrial establishments is excellent, and includes not only a very comprehensive and immediately useful list of items to be dealt with, but an excellently drawn up and complete scheme for organization. S. C.

A HANDBOOK OF PERSPECTIVE DRAWINGS, *by James C. Morehead and James C. Morehead, Jr. ($4.50, vi plus 166 pages, including 77 pages of drawings, and 56 small drawings, 9" x 12" —James C. Morehead, Publisher, 4815 Bayard St., Pittsburgh, Pa.)*

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Detail of valley construction. Toledohio tiles come in many pleasing colors, glossy or dull, to harmonize with any exterior decorative plan.

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The beauty and permanence of porcelain enameled tiles are in no small part due to their base of Youngstown Enameling Sheets -- a material of uniform purity and strength, which readily takes deep and sharp draws, contributes to a flawless, glass-smooth porcelain finish and lasts indefinitely to give a lifetime of satisfaction.

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• ARMCO *Ingot Iron was also used for the roofing and siding of these inert storage warehouses.*

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In building it, Army engineers used 258 tons of corrugated Galvanized ARMCO Ingot Iron for roofing and siding on more than a score of shop and storage structures—another example of the vital part this well-known durable metal is playing in Defense.

ARMCO Ingot Iron has proved its worth in industrial service. It has the longest actual record of service of any low-cost iron or steel sheet. Installations made in 1909 are in good condition today.

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ARMCO INGOT IRON

concise clarity of its text, and the orderly progressiveness of its contents will appeal to student, practitioner, and specialist alike.

Professor G. W. Baumeister, Associate Professor of Graphics, University of Pennsylvania, considers it to be "much more a reference book than a textbook," and recommends it for library use. Professor John F. Harbeson, Chairman of the Department of Architecture, University of Pennsylvania, and Professor of Perspective Drawing at the Pennsylvania Academy of Fine Arts, feels that "it will be a very good book for the classroom teaching of perspective to architects." He is particularly impressed with its exposition of three-point perspective. HARRY STERNFELD

PUBLICITY IS BROCCOLI, *by Constance Hope ($2.00, 264 pages, illustrated—Bobbs-Merrill Co., 468 Fourth Ave., New York.)*

Fashion may be spinach to Elizabeth Hawes but publicity is definitely broccoli to Constance Hope—broccoli served up with a sauce of reminiscences of the adventures and misadventures of her firm, Constance Hope Associates, Inc.

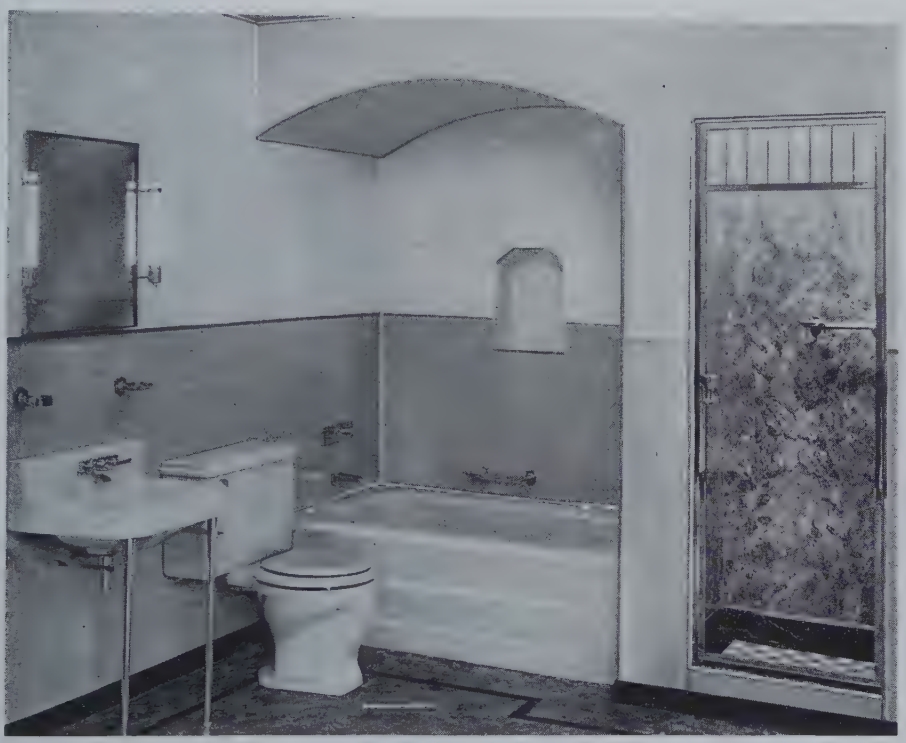
As Miss Hope points out, few people other than harassed editors know exactly what publicity really is. Sometimes even the clients don't know. The consensus of opinion would seem to be that publicity is some form of the advertising business, or a sort of free-lance writing service.

There are three types of this peculiar service: the press agent who refuses to believe that there is such a thing as bad publicity; the publicist who attempts, in addition to making the client well known, to create a definite sort of impression of his client; the public relations counsel who functions mostly as a cover-up man for large corporations when a senatorial investigation is about to break.

Architects should consult the publicist, who would not only see that the architect's name is before the public eye, but also see that the mention is made in the proper vein. If, for instance, the architect is best known for one or two large buildings he has designed but his heart and talents lie in the designing of small modern homes, the publicist will arrange with the Woman's Page editors for interviews on Modern Living or How To Have Your Dream House For Fifty Dollars a Month and the FHA. JACK SHELDON ARNOLD

A NEW TREATMENT FOR OLD (OR NEW) WALLS

Here's why new DE LUXE MONOWALL *belongs in your interior plans*



MOISTURE CAN'T HARM *the colorful work-saving walls in this modern bathroom. They're gleaming Armstrong's De Luxe Monowall erected with smart decorative strips and edgings. Note the distinctive marbleized effects in the stall shower. Sanitary and durable, Monowall requires a minimum of care, stays fresh and new-looking for years.*

MONOWALL IS RIGHT AT HOME *in an office, too. Here the wainscot is Light Skyros (Marble) No. 904. Furniture is covered with American Walnut No. 813 accurately simulating matched-grain wood.*

•

LARGE-SIZED, EASILY HANDLED PANELS *of Armstrong's De Luxe Monowall (up to 4′ x 12′) make installation quick and inexpensive. Monowall may be applied right over old plaster (if firm) thus eliminating the dust and litter of removed plaster.*

WHETHER you're planning new rooms or remodeling old ones, here's a wall and ceiling material that deserves your serious consideration. It's Armstrong's De Luxe Monowall . . . an improved, hardened wood-fibre board which comes factory-finished in four design types (solid colors, tile-, marble-, or wood-designs) and 33 attractive colors.

Yes, Monowall *belongs* in your interior plans . . . in residential or commercial construction. Low in cost, light but strong, it has a tough, glass-smooth surface for long wear. Made in large-sized boards, up to 4′ x 12′, which reduce the number of joints to a minimum and permit fast, "one-piece" installations. Rounded score lines in the tile-designs (10 in all) give a realistic appearance of having been built up block by block. These scorings also make cleaning easier because they can't catch and hold dirt.

Free, color-illustrated literature

For further information, see "Sweet's," or write now for samples and our latest free booklet, "Modern Walls at Low Cost." Address Armstrong Cork Company, Building Materials Division, 911 Concord Street, Lancaster, Pennsylvania.

ARMSTRONG'S MONOWALL

TEMLOK INSULATION—SHEATHING, LATH, DE LUXE INTERIOR FINISH

Kimbrough Towers apartments, Memphis, Ten
H. M. Burnham, architect. H. B. Hulsey, associa
architect. Gardner & Howe, structural eng
neers. John F. Kimbrough, Jr., realtor. S. & W
Construction Co., contractors.
A piece of good business
. . . and all one piece of
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CONCRETE
Kimbrough Towers apartments is a better investment because of its imaginative design in concrete . . . and because of concrete's economy, firesafety and low maintenance. Concrete walls as you see them here were cast integrally with frame, floors and roof. It's the time- and money-saving way to construct your rental building, store, factory or industrial plant; ask your architect or engineer or see Sweet's Catalog 4/49. Literature on request.
PORTLAND CEMENT ASSOCIATION
Dept. A12-25, 33 W. Grand Ave., Chicago, Ill.
A national organization to improve and extend the uses of concrete . . . through scientific research and engineering field work

THE MIRACLE OF DEFENSE CONSTRUCTION

by Frazier Hunt

FOUNDATIONS FIRST. *Before the airplane hangar (right) could go up, the hard-working bulldozer (above) had to dig up and level out the foundation. The bulldozer, with its tractor tread and colossal roar, is the building industry's private "tank."*

NOTE TO READERS:

The article reprinted here appears, as a Johns-Manville paid advertisement, on pages 121 and 122 of the December 13th issue of the *Saturday Evening Post*. It is one of a series by well-known writers, designed to help inform the public of the indispensable part American Industry is playing in our National Defense Program.

Because the spotlight of defense publicity has been on tanks, guns, ships and planes, too few people are aware of the miracle of construction which had to precede the production of these defense materials. Factories had to be planned and built. Workers had to be housed. Roads, bridges, air fields, fortifications, bases and a hundred other building jobs had to be started from scratch and completed "yesterday."

How this great building industry, recovering from the worst depression in its history, dug in and achieved the impossible is here recounted for the first time. It is our sincere hope that in presenting this story to millions of readers we are making a contribution to the entire construction industry and to each individual member of it.

Johns-Manville

AMONG THE UNSUNG HEROES of America are the "bulldozers"—those giant machines which, like faith, can move mountains.

The whole story of American preparedness starts with those snorting monsters and with men with blueprints and steam shovels, cement mixers, pile drivers, and the thousand and one other tools that are used on any kind of a building job.

Because bombers don't grow on trees. And tanks don't bloom on rose bushes. And you don't dig TNT out of the ground as you do potatoes. All those weapons are made in great factories, giant plants—in buildings that have to be planned by engineers and architects, and built by carpenters, riveters, welders and roofers, working from sunup to sundown.

Before the tank, before the bomber, before the army, had to come the bulldozer-operators, the masons, the steel workers, the electricians, the plumbers, the painters and the whole construction gang . . . And what an almost inconceivable number of buildings are needed for National Defense! Around 1400 separate housing units in an average cantonment; close to a thousand separate buildings in a powder factory; hundreds of sheds and storage bins at a Navy Yard; houses for the workers near many new plants—ground to be cleared, streets to be laid out, roads built, water mains installed, whole cities built from the ground up. What *is* the construction business? Brother, it's everything you *don't see*—multiplied by ten! You see the tank on the ground or the plane up in the air, but if the construction industry hadn't done *its* job, there wouldn't *be* any tank and there wouldn't be any plane, either.

To realize how the building industry really *has* performed miracles, you must realize that this industry had to start from scratch. Particularly was this true of those architects and large construction companies which, during the great American building era of the twenties, had sent beautiful edifices of steel, stone and cement soaring high into the sky. These builders of great new cities, of office buildings, of mammoth factories, of power plants, of bridges and transportation arteries that were the wonder of the world—these builders and the architects, designers and engineers had faced a famine since 1930. The genius was there. The will to build was there. But only through digging deep into their bank accounts had they been able to keep even a skeleton organization together. Only the courage born of free enterprise could have sustained them. About all they had left was one shirt to their backs . . . Yet these same men are performing the miracle of defense construction for America today.

These men might well have said, "Give us a year to get ready. Our staffs are scattered, our equipment rusty." But there wasn't any year. THE TIME WAS NOW!

The Building Materials Dealer

It wasn't only the big boys who rolled up their sleeves and went to work, either. The local building industry responded, too. The building materials dealers, many hard hit by the depression, instantly made their services available for National Defense housing and other construction. They did this often at a sacrifice because they were already short of materials for civilian needs (that's you and me). Despite the fact that building materials manufacturers have been working their plants 24 hours a day, seven days a week, the dealers are finding it increasingly difficult to furnish supplies with the speed the public has been educated—up to now—to expect.

These smaller companies have shown typical American initiative in meeting their difficulties despite delay in getting materials and shortage of skilled workers. They are particularly deserving of sympathetic understanding on the part of the American public at this time, and it is certainly to their credit that they are not only finding ways around their present difficulties, but are also planning for the future. For these are the men on whom Mr. and Mrs. Homeowner, U. S. A., must depend for the type of housing which will express the true American way of living when peace has come.

We writers and talkers are too deep in the forests of finished products that American genius has built, to be able to see the individual trees. We forget, sometimes, that Uncle Sam didn't furnish the bulldozers and the thousand and one necessary tools when

(*Continued on next page*)

This is the sixth of a series of advertisements sponsored and paid for by Johns-Manville. For more than 80 years this company has been serving America's basic industries.

How indispensable these industries are to the American Way in time of peace is generally recognized. This series is to help inform the public of the indispensable job these industries are doing in this time of great National Emergency.

Johns-Manville is proud of the contributions its products are making in helping the Construction Industry accomplish "The Miracle of Defense Construction" quickly and at the lowest possible cost.

JOHNS-MANVILLE

THE MIRACLE OF DEFENSE CONSTRUCTION

(Continued from preceding page)

the defense rush struck. These tools were furnished by the great and small building concerns and contractors who had kept alive for ten years only through their courage and ingenuity. Someday they knew they would be needed, and needed desperately. That day came when France fell, and America awoke to her peril. Overnight America demanded adequate defense—armies, training camps, guns, tanks, planes, shells, ships, TNT and powder. And when that call to duty came, not one miracle occurred, *but a thousand!* In a year—in two at the most—the builders HAD to do what Germany had taken seven, in some cases ten years to do.

And they did it! They are saving America by literally building a NEW America. They have conquered Time—they have laughed at Fate. They are winning! Today the bombers and the tanks and the big guns are rolling out of the factories which these men—these builders of the NEW America—have built.

The other day I stood on a spot where for a hundred years tall corn had grown. It was the heart of the broad Corn Belt of this rich land of ours—a single plot of 22,000 acres lying between the Kankakee and the Des Plaines Rivers, a few miles out of Joliet, Illinois. In this single great triangle, where for generations 146 Illinois families had grown corn, were all the basic requirements for a giant plant to make the high explosives for our bombs, shells and torpedoes. Here was plenty of water, excellent transportation, hard roads, safety from enemy bombing attacks and rolling land for protection against inside explosions.

One Miracle Among Many

So *this* was the spot for "the miracle of the corn fields." The construction company which did the job asked few questions when the government gave them the nod. Quietly they shipped in their key men, and then added workmen at the rate of 100 a day. The bulldozers grunted, the cement mixers groaned, the men sweated and swore—but where the tall corn had grown, there now sprouted chimneys, pipelines, buildings and shops. The sum total of these adds up to one of the biggest, most efficient and safest TNT plants in the world—all done ahead of schedule. That's easy to write about, but these men on the job, just as a starter, had to build 51 miles of standard-gauge railroad, with 117 loading and unloading stations; 44 miles of heavy-duty roads and 80 miles of ordinary highways; 85 miles of pipelines that ran from 4 inches to 42 inches—with 15 miles of sewage pipe thrown in for good measure (and good sanitation). Before this mighty TNT plant was completed, the construction company had put up 460 separate buildings.

The building of this plant is but one example of the job being done. So vast, so widespread is our defense construction a writer despairs, in a short article like this, of ever getting across to you its true magnitude. Maybe this would help: In the first nine months of 1941, we have used enough concrete in airport pavements alone to equal almost all the concrete used in road building in these 48 states in the same period. To pave these urgently needed airports, we have laid enough concrete to build a single-lane transcontinental highway from Charleston, South Carolina, to Los Angeles and back again East as far as Indianapolis, Indiana, or more than 5,000 miles.

America Does It Again

The blue eyes of hard-working, super-efficient, 49-year-old Brigadier General Brehon Somervell, Chief of the Construction Division of the Army Quartermaster Corps, twinkled with pride when he talked to me in his Washington office about the all-important part the building industry is playing. "You can't exaggerate what has already been accomplished," he said to me. "It's like the statement made by the great General Goethals about the building of the Panama Canal, *'Birds were singing in the trees one week and ships sailing by the next.'* Americans, working for America, have done it again! The whole building industry has come forward in unbelievably fine shape . . . The results speak for themselves. The efficiency and patriotism of these splendid men have been inspiring. They have tackled what looked to be impossible jobs and they have driven them through, and in many cases ahead of schedule. Labor, too, has, on the whole, been fine . . . We have almost completed our first great program and are deep in our second now. I can't say too much for these men of this fundamental industry."

I don't want to bog you down with figures, but it is fascinating to take hold of one or two items involved in the single business of Army-cantonment construction. We've used enough lumber in our Army camps to nail a 12-inch plank, 1 inch thick, eight and three-quarters times around the world. In building camps and Army cantonments alone we've employed more than 490,000 workers, and a billion dollars' worth of lumber. A score and more of our great civilian building contractors simply rolled up their sleeves, spat on their brawny hands, and dared bad weather and hard luck in their drive to get finished, in time, camps that would be snug and habitable for our expanding army.

How the Job Was Laid Out

The whole enormous job really breaks up into three separate divisions—and behind each stands the vast civilian building industry, with its trained men, its tools and its high patriotism. The Army & Navy Corps and Bureaus developed their specifications and then turned them over to the trained civilian architects and engineers of the country. These men, with their first-hand knowledge of materials and design, did the original planning. They worked night and day, adapting civilian methods and techniques to the new field of construction necessary to our national defense.

All of them did—and are doing—their work in three main divisions because all military construction was split into three parts. *First:* To the Construction Division of the Quartermaster Corps went the job of building the plants for Army training, and ordnance and soldier supplies. *Second:* To the Army Corps of Engineers went the task of laying out the construction of fortifications, camouflage works and all Army Air Corps projects and bases, including the nine great air bases acquired in the Atlantic from the British and the new Alaskan air fields. *Third:* To the Bureau of Yards and Docks of the Navy went the complicated job of building naval air bases in the Pacific and Atlantic, as well as at home, and the whole varied and multiple tasks of Navy construction, from shipyards to training schools.

Behind each of these three divisions stood, in phalanx, the great building industry. Architects, engineers and contractors furnished the brains and the muscle to drive the nails in our far-flung fortresses of safety. Also, hundreds of our finest construction brains were willingly drafted to serve as reserve Army and Navy engineers and Constructing Quartermaster officers. From the Philippines to Puerto Rico is ten thousand miles; from Dutch Harbor, Alaska, to Samoa, in the South Seas, is roughly five thousand miles. So the picture of our preparedness program covers a canvas five thousand by ten thousand miles square. Over this great expanse of land and sea, American engineers, builders with saw and hammers, contractors with fantastic bulldozers and pile drivers, have swarmed like busy bees.

A billion dollars was assigned to the Engineer Corps of the Army. There were bomber and fighter factories and assembly plants to be constructed, air bases to be rushed to completion . . . Altogether 54 great groups of buildings and bases.

Almost overnight a new base is born; a new pearl added to our priceless necklace of national defense—Guam, Wake, Midway, Palmyra, Johnson—these are a few of the names.

Groups of sturdy, daring contractors banded together on most of these jobs, and they found they had to build from the coral and sand *up*. These new Magellans, modern Vasco de Gamas had to tote everything with them, including drinking water!

People Back Home

And (to get back home) in this year of 1941, despite the heavy demands of war, our builders have found time somehow to build many of the new homes needed in defense areas. Next year they will build more. But many materials that might go into homes will have to go to defense plants, powder mills, air schools and shipyards, and so We the People must be patient. When our nation is fully armed and strong we can go ahead and build our new homes once again, without let or hindrance.

And in the meantime we can also thank our building-material manufacturers for having the courage, good sense and patriotism to keep intact their organizations, their research laboratories and their staffs when the going was tough and uncertain. Many had to draw deeply on their reserves, but when the crisis came and the building industry had to really perform "the miracle of defense construction," it was ready with new products, more efficient production, to tackle *and finish* the job. Once again, private industry had proved it could "take it."

So why should any of us complain if, during this coming year, the great effort and the continued need of turning out vast quantities of war goods leave us short-handed in men and materials for home building? The sacrifice and the temporary hardships will be well worth the cost, it seems to me. For what is a home worth if it be not secure, free and decent?

That's what we're struggling for and arming for, isn't it? And, when we get there, don't forget the defense job had to be done *from the ground up*—that private industry was ready to do it—and that the roar of the bulldozers was the first signal of ultimate victory for our democratic way of life.

This is the sixth of a series of advertisements sponsored and paid for by* Johns-Manville *and designed to tell the American people how indispensable our basic industries are for National Defense.

RICH FORMICA REALWOOD

—in the President's Room at the National Airport

WOOD appears at its very best when it is cured into a sheet of Formica and acquires the clear, deep, permanent plastic finish all of these sheets possess. That was doubtless the reason why Howard Lovewell Cheney, designer of the new National Airport Building in Washington chose Formica Walnut Realwood for the doors and walls of the President's reception room which is illustrated above.

Genuine wood veneers thus incorporated in Formica sheet are protected from crazing and cracking; the finish does not fail and need to be renewed; the material becomes inert chemically and resistant to staining by any ordinary solution. It can be washed with soap and water or other solvents and is therefore easily kept clean. After years of use, in fact, it will look just as it did the day it was installed.

These practical qualities, plus the inherent beauty of the material make it constantly more popular for public buildings.

FORMICA REALWOOD

. . . is a new material of wide usefulness and has been incorporated in many of the fine new buildings which have been erected in Washington in recent years. It is used for reading desk tops in the annex to the Congressional Library, and Formica in other colors is used for many other purposes in the same building. It was used for elevator cab interiors in the new Municipal Center at Washington. And in the Social Security Building, Supreme Court Building — in fact in nearly all recent additions to the public buildings of the Capital, it has found a place.

THE FORMICA INSULATION COMPANY
4620 SPRING GROVE AVENUE CINCINNATI, OHIO

FORMICA

FOR BUILDING PURPOSES

CLARITY · PERFECTION · PERMANENCE

in the Finish of Genuine Wood!

Entrance doors from the Ante-Room to the President's Reception Room at the National Airport, Washington. All Formica material was installed by John C. Knipp & Sons, Baltimore.

Formica Walnut Realwood as used for the telephone booths and the Western U desk at the National Airport, Washington.

When wood veneers of Walnut, Mahogany, Sapelli, Lacewo Avodire, Bella Rosa, Prima Vera or of many other varities, is introdu into a Formica sheet it is protected by a colorless film of plastic, t remains colorless and clear—the most brilliant and perfect finish t has ever been possible for wood.

Thus genuine wood grains are made available in a plastic sheet t has many useful qualities. It is light—half the specific gravity of alu num. Moisture absorption is low and dimensional changes due to va tions in humidity are minimized. The material stands considerable h without injury. Being non-porous it does not absorb stains, and be chemically inert it resists discoloration by chemical action.

An endless variety of decoration is possible by pressing silhou inlays in a contrasting color into the Formica sheet when it is made.

In the main lobby, the ticket desk has a black Formica top and black turrets made of Formica sheets with wing inlays of silver.

Let us send literature showing erect details and color charts.

THE FORMICA INSULATIO COMPANY

4620 SPRING GROVE AVENUE CINCINNATI, OHIO

FORMICA

FOR BUILDING PURPOSE

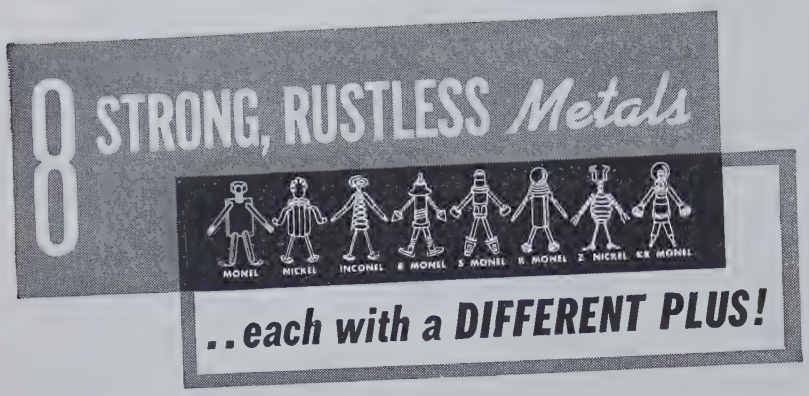
H & H RECEPTACLES

THE LINE goes round a world of applications, — residential, commercial, industrial . . . Two, three and four-wire Receptacles; 10 to 50 Amperes. Wide range of types for *polarized* connections. Radio Outlets, too.

The bases are of molded materials, including brown Bakelite and cream-tinted white Ivorylite. The design and finish conform to your rating of H & H Quality.

You need look no further for Receptacle developments to date. This group has every convenience-feature, *plus* all-in-one-line convenience in specifying.

HART & HEGEMAN DIVISION
THE ARROW-HART & HEGEMAN ELECTRIC CO. HARTFORD, CONN.



Extra hardness, heat-resistance, non-magnetism, free-cutting and other qualities available in INCO Nickel Alloys

You doubtless know that Monel combines *strength* with excellent *resistance* to *corrosion.* But do you know that newer members of the INCO Nickel Alloy family combine varying degrees of strength with other useful properties? For example:

One of these metals is extra hard and non-galling; two are free-machining, two heat-treatable, one is non-magnetic, one especially adapted for high temperature service, while several make excellent spring materials for use under different conditions.

Knowing the *individual* characteristics of the INCO Nickel Alloys, will better enable you to meet the requirements of defense and other contracts. Write for the booklet, "*Individualized* INCO NICKEL ALLOYS." Address:

THE INTERNATIONAL NICKEL COMPANY, INC.
67 Wall Street **New York, N. Y.**

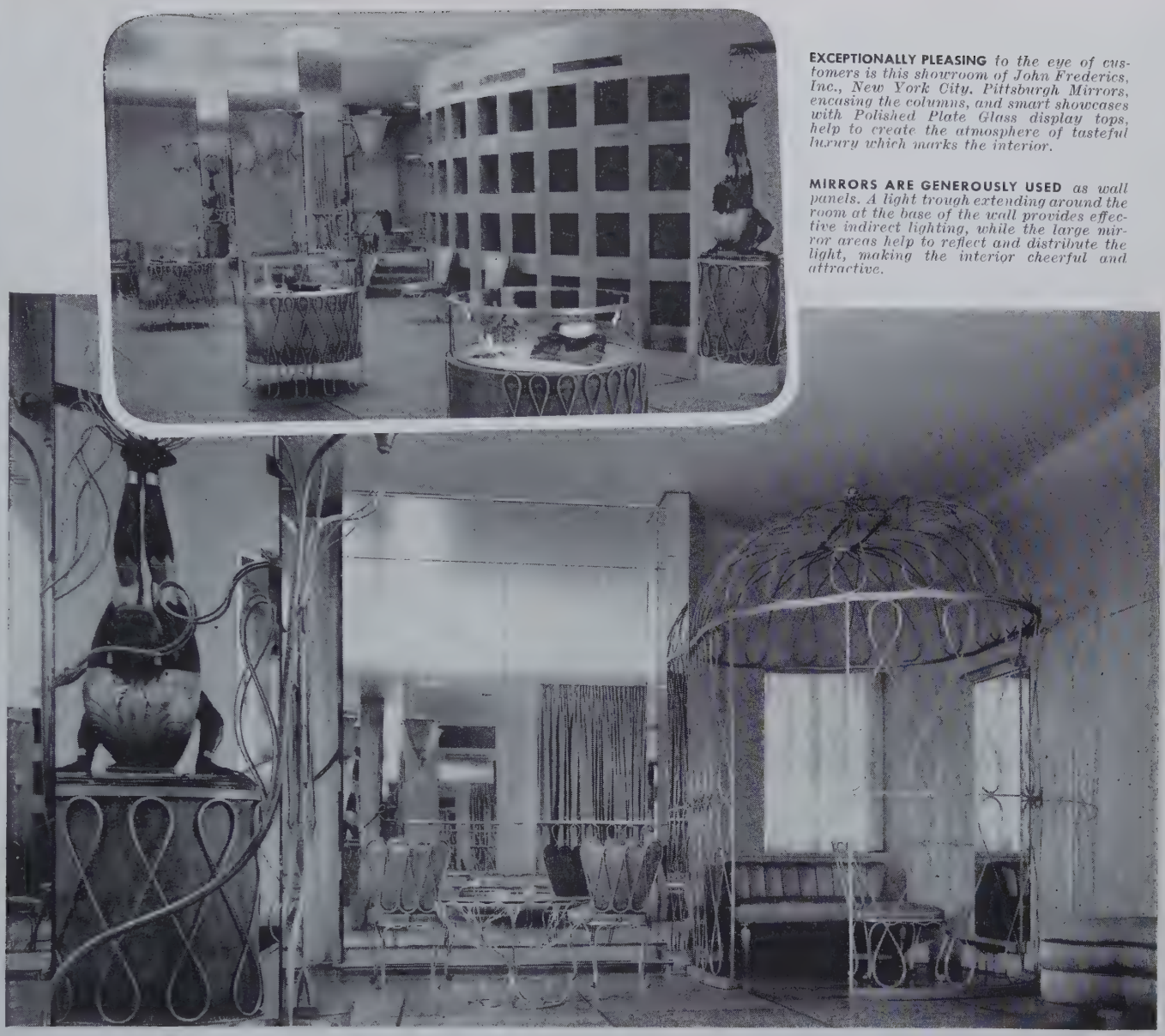
	INDIVIDUALIZED CHARACTERISTICS	AVERAGE MECHANICAL PROPERTIES					
		Condition	Tensile Strength 1000 psi.	Yield Strength 1000 psi.	Elongation in 2 in. per cent	Hardness Brinell 3000 kg.	Impact Strength Izod
MONEL* 2/3 Nickel 1/3 Copper	GENERAL PURPOSE ALLOY Corrosion Resistance, Strength, Hardness, Toughness. Attractive Silvery White Color.	Annealed Hot-rolled Cold-drawn Cold-rolled, hard-temper	75 90 100 110	35 50 80 100	40 35 25 5	125 150 190 240	105 110 95
"R" MONEL* Contains the addition of .035% sulfur—	FREE CUTTING For High Speed Machining.	Hot-rolled Cold-drawn	85 90	45 75	35 25	145 180	96 99
"K" MONEL* Contains the addition of 2.75% Aluminum	EXTRA STRENGTH AND HARDNESS comparable to heat treated alloy steel. Heat Treatable. Non-magnetic.	Hot-rolled { As-rolled Hot-rolled { Heat-treated Cold-drawn { As-drawn Cold-drawn { Heat-treated	100 150 115 155	45 110 85 115	40 25 25 20	160 280 210 290	120+ 40 56 26
"KR" MONEL*	FREE CUTTING Extra Strength and Hardness. Heat Treatable. Non-magnetic.	Hot-rolled { As-rolled Hot-rolled { Heat-treated Cold-drawn { As-drawn Cold-drawn { Heat-treated	105 150 115 155	65 105 85 115	40 25 25 25	185 280 215 290	
"S" MONEL* Contains the addition of 4% silicon	EXTRA HARDNESS Non-galling.	Sand-cast { Annealed Sand-cast { As-cast Sand-cast { Heat-treated	90 130 130	70 100 100	3 2 2	275 320 350	
NICKEL 99.4% Nickel	CORROSION RESISTANCE Protection for Pure Products. Magnetic below 680° F. Good Electrical Conductivity.	Annealed Hot-rolled Cold-drawn Cold-rolled, hard-temper	70 75 95 105	20 25 70 95	40 40 25 5	100 110 170 210	120+ 120+ 120+
"Z" NICKEL* 98% Nickel	EXTRA STRENGTH AND HARDNESS Heat Treatable. Excellent Spring Properties. Good Electrical Conductivity. Magnetic.	Hot-rolled { As-rolled Hot-rolled { Heat-treated Cold-drawn { As-drawn Cold-drawn { Heat-treated	105 170 120 175	50 130 90 135	35 15 25 15	180 320 220 340	120+ 25 120+ 25
INCONEL* 80% Nickel 14% Chrome Balance—Iron	HEAT RESISTANCE Retains Strength. Resists Oxidation. High Corrosion Resistance.	Annealed Hot-rolled Cold-drawn Cold-rolled, hard-temper	85 100 115 135	35 60 90 110	45 35 20 5	150 180 200 260	120+ 110 85

*"MONEL" and other trade-marks which have an asterisk associated with them are trade-marks of The International Nickel Company, Inc.

INCO NICKEL ALLOYS

MONEL • "K" MONEL • "S" MONEL • "R" MONEL • "KR" MONEL • INCONEL • NICKEL • "Z" NICKEL

Sheet...Strip...Rod...Tubing...Wire...Castings



EXCEPTIONALLY PLEASING *to the eye of customers is this showroom of John Frederics, Inc., New York City. Pittsburgh Mirrors, encasing the columns, and smart showcases with Polished Plate Glass display tops, help to create the atmosphere of tasteful luxury which marks the interior.*

MIRRORS ARE GENEROUSLY USED *as wall panels. A light trough extending around the room at the base of the wall provides effective indirect lighting, while the large mirror areas help to reflect and distribute the light, making the interior cheerful and attractive.*

New York shop gains striking beauty with GLASS!

(JOHN FREDERICS, INC., NEW YORK

DESIGNER: T. H. ROBSJOHN-GIBBINGS. ARCHITECT: RENÉ BRUGNONI)

INTERIOR designers and architects everywhere are realizing more and more that Pittsburgh Glass represents one of the most versatile and efficient tools for the creation of striking interiors.

Pittsburgh Glass Products are leaders in their fields, and may be depended upon for consistently high quality. Your potential customers are being told, through extensive advertising in their favorite magazines, the advantages of using these products in store, hotel, theatre and restaurant interiors.

Send the coupon for our free book containing information about Pittsburgh Glass Products for interior use, and numerous photographic examples of glass applications in business interiors of practically every kind.

For best results... use

PITTSBURGH GLASS

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"PITTSBURGH" stands for Quality Glass and Paint

Pittsburgh Plate Glass Company
2029-A Grant Building, Pittsburgh, Pa.

Please send me, without obligation, your free, illustrated book "Better Interiors for Better Business . . . With Glass."

Name_____

Address_____

City_____ State_____

When it's moving time in Missoula ... EYES TURN TO *Stucco*

●Attractive apartment building in Missoula, Montana, faced with Atlas White portland cement stucco. Architect and builder—O. B. Parsons.

IT'S natural for people's eyes to be caught by this apartment building in Missoula, Montana. Prospective tenants stop short when they see its trim, clean lines . . . its fresh, modern beauty. For this apartment is faced with portland cement stucco—made with Atlas White cement!

It's not the first time Mr. Parsons, architect and builder, has taken advantage of this versatile material. Some time ago he built houses of stucco . . . and they sold like hot cakes, even before they had been finished!

So, for quick renting and lasting beauty, he again used Atlas White portland cement stucco. Like countless other builders, he knows that a thin, sturdy wall of this material provides a permanent, weather-resistant and fire-safe exterior that virtually eliminates maintenance. Moreover, its cost is surprisingly moderate.

Whether you plan new buildings or modernize old ones, it will pay you to consider stucco made with Atlas White portland cement. Universal Atlas Cement Company (United States Steel Subsidiary), Chrysler Bldg., N.Y.

• • •

OFFICES: *New York, Chicago, Philadelphia, Boston, Albany, Pittsburgh, Cleveland, Minneapolis, Duluth, St. Louis, Kansas City, Des Moines, Birmingham, Waco.*

FACTORY-MADE STUCCO IS PREFERABLE

PP-S-23

ATLAS WHITE CEMENT

A UNIVERSAL ATLAS PRODUCT

FA BUSDUCT in strong 20-foot sections!

In actual practice, the only weight borne by the Busduct is its own. Yet, under the weight of these two heavy men — approximately 500 pounds — the deflection in this 20-foot section is scarcely noticeable. This indicates the exceptional strength built into the design of FA Busduct.

This standard 10-foot section of Plug-in FA Busduct shows the nine plug-in outlets, and, from left to right: FA Shutlbrak Switch Plugin; FA Klampswfuz Plugin (open), and FA Klampswfuz Plugin (closed). 20-foot sections have 18 outlets.

FA Busduct is made regularly in standard 10-foot sections. But here was an unusual situation, because busduct supports in the plant were possible only at 20-foot intervals. This presented a special engineering problem of producing busduct in *20-foot sections* which would have *minimum deflection* under these supporting conditions. The problem was met by FA Engineering and Production Departments — and the specially designed equipment shipped in record time to a vital defense plant.

FA Busduct is the modern compact, flexible and convenient method of distribution for power and light. It is ideal when changes are necessary in machine layout. Time lost in placing or relocating machines is reduced to the minimum. Simply "move the machine — plug in — go!"

While both Feeder and Plugin types are made in standard 10-foot sections, variations are possible to meet special conditions, as above. Each standard section of the Plugin type is arranged with nine plug-in outlets on 12-inch centers. Suitable elbows, tees, end boxes, intermediate feed-in and feed-out boxes, are supplied to fit required space or position — whether on wall or ceiling.

The copper busbars are contained in enclosures of steel or aluminum. They are rigidly supported at 30-inch intervals by specially designed insulators that insure proper spacing — to meet the requirements of the National Electrical Code. Contact surfaces of connecting bars are silver-plated, to insure low resistance joints. Designed for 2, 3 and 4-wire feeder systems; 250 volt DC, 575 volt AC, maximum. Plugin type capacities: 125 to 1,000 amps.; Feeder type, from 250 amps. and up.

FA Busduct is practically immune to deterioration. It may be taken down and installed in new positions, in the same or different buildings, as need may require. Extensions may be made readily to existing installations. Moderate first cost is combined with low up-keep.

FA Sales-Engineers Can Help Manufacturers, Architects, Engineers and Contractors with Their Distribution Problems

Their long experience and training are at your service — without obligation. Write for name and address of the one nearest you. Also, for Bulletin 61, which contains complete description, applications and detail drawings for FA Busduct . . . Frank Adam Electric Company, St. Louis, Mo.

EST. 1891 — THE SIGN OF A FA BETTER JOB

Frank Adam

1891 FIFTY YEARS SERVICE 1941

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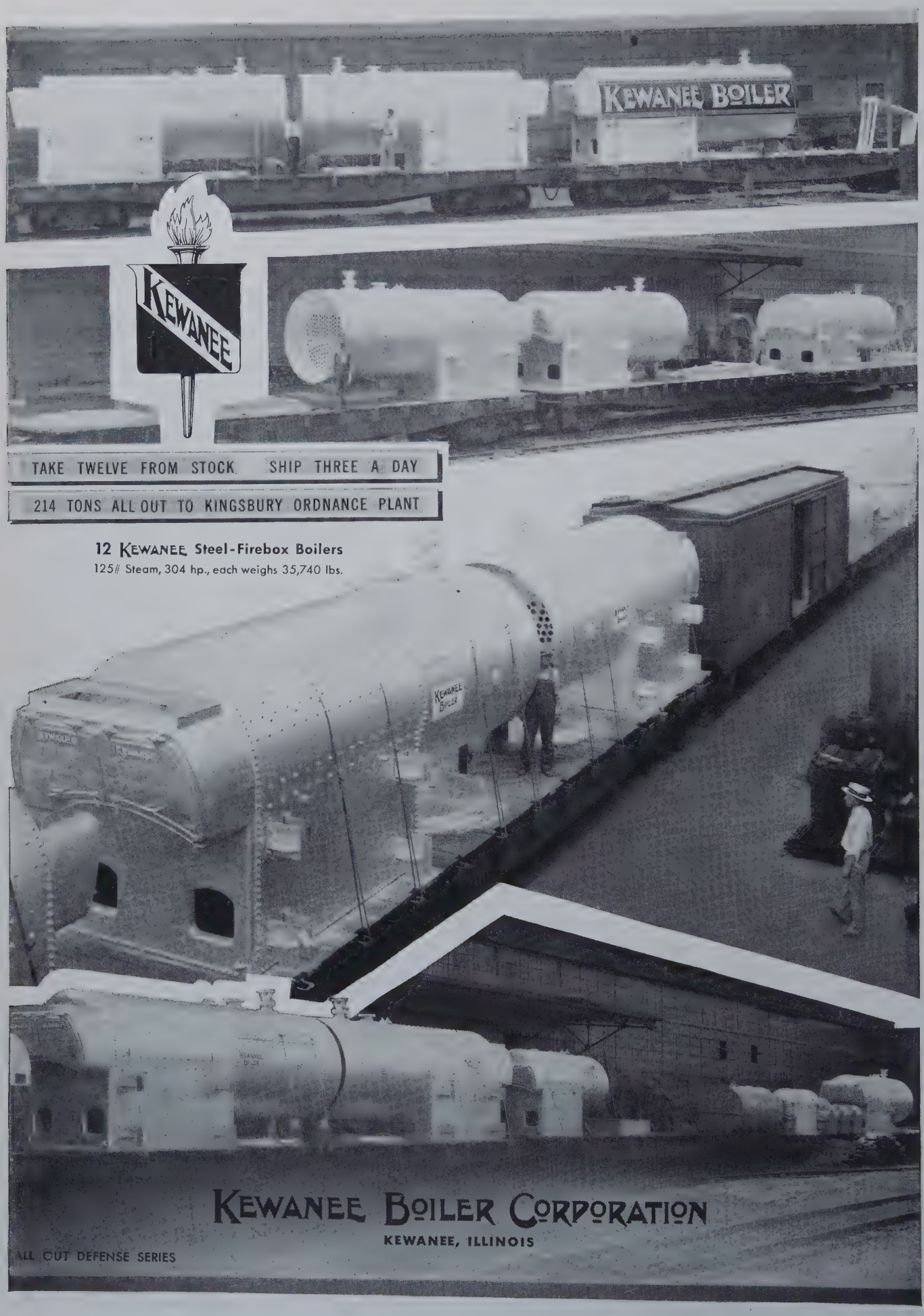
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TAKE TWELVE FROM STOCK SHIP THREE A DAY
214 TONS ALL OUT TO KINGSBURY ORDNANCE PLANT
12 KEWANEE Steel-Firebox Boilers
125# Steam, 304 hp., each weighs 35,740 lbs.
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NO. 9

ALUMINUM, DEFENSE, AND YOU

SIX MORE PLANTS IN FIVE STATES ON THE WAY

DEFENSE PLANT CORPORATION OWNS THEM. We've been designated to build them . . . fast.

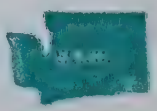
Actually, when the names went on the dotted lines of the contract on August 19, we had already placed more than $16,000,000 worth of orders for some of the equipment and materials it takes longest to make and get.

FIVE OF THESE PLANTS will smelt aluminum. Their combined capacity is planned for more than 500,000,000 pounds a year, which is greater than the nation's entire production of aluminum in 1940. Locations: Massena, N. Y., Spokane, Wash., Troutdale, Ore., Los Angeles, and in the State of Arkansas.

The sixth plant will refine alumina from bauxite. Its billion-pounds-a-year capacity adds 58% to the nation's alumina capacity. It will be located at Bauxite, Arkansas.

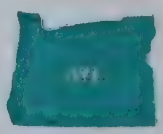
HOW GOES CONSTRUCTION? At this writing, as fast as title is secured to the sites, contracts are being let for grading and foundations so as to be ready for the structural steel, which is coming as rapidly as it can be gotten.

What is more important, the aluminum plants are scheduled to deliver ingot by the summer of 1942; the refining plant to deliver alumina in early summer, 1942.



WE'VE ASSIGNED a large staff of men full time to headquarters engineering, purchasing, and accounting on this government building job.

We're sending competent and experienced management men out on these jobs as superintendents and other staff executives on construction, and for subsequent operation of such of these plants as we are designated to operate.



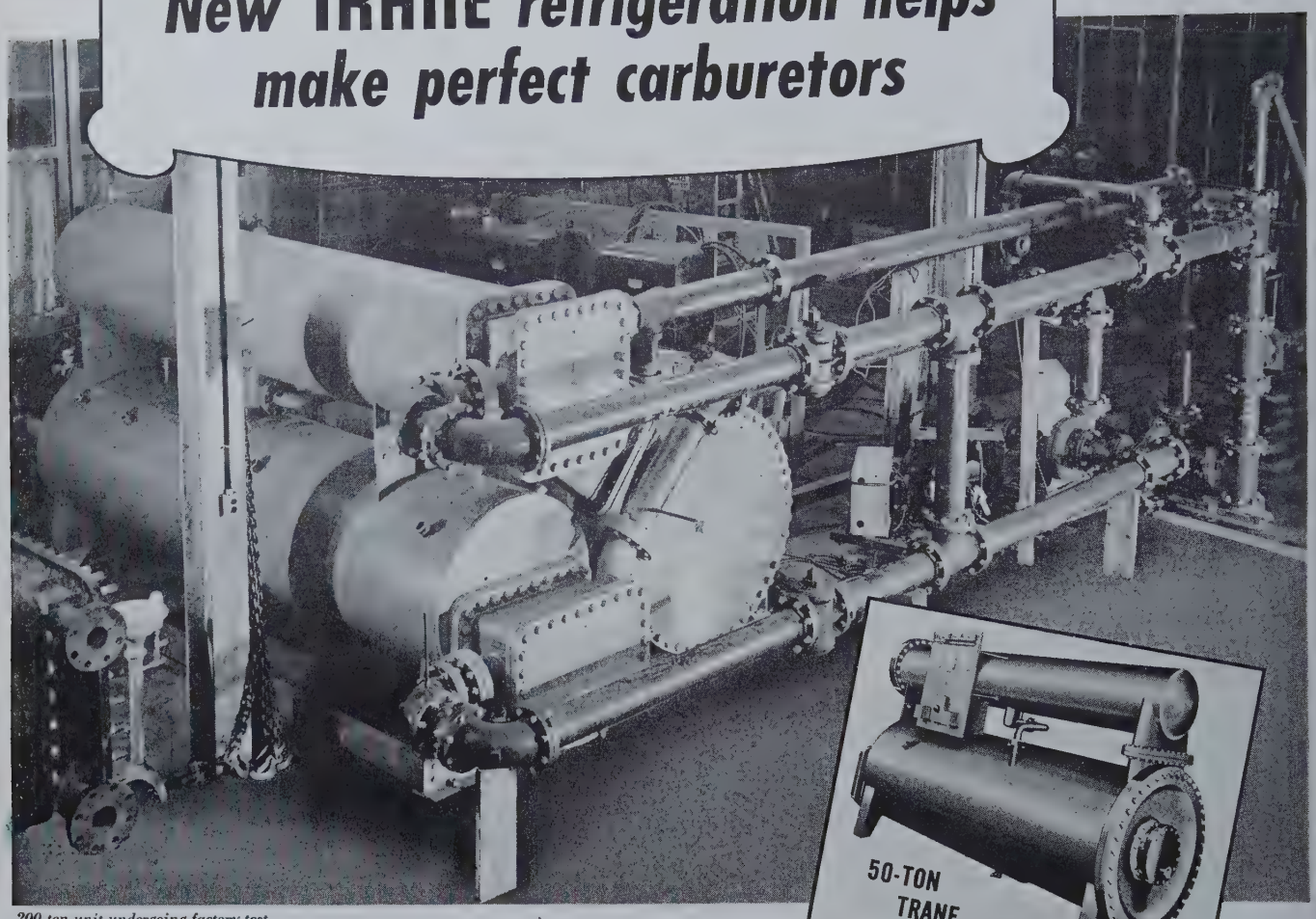
EVERY KNOWN IMPROVEMENT in design and construction and equipment is being incorporated in these plants. We intend that every dollar that will be spent shall be the best dollar's worth that experience can build. We do not make one cent of profit from this assigned job of construction.

We think we know how to get the government value-received for its money, because we are completing the expenditure of more than $200,000,000 of our own money in an expansion program which started after the beginning of the present war. Some of this expenditure is in new alumina and aluminum plants which will bring our own Alcoa capacity up to more than 700,000,000 pounds a year. The remainder is in tremendous expansion of facilities for fabricating every form of aluminum.

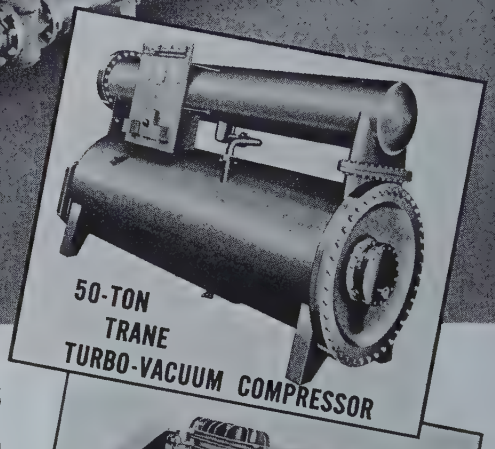
DEFENSE, GENTLEMEN, is getting its aluminum.

ALUMINUM COMPANY OF AMERICA

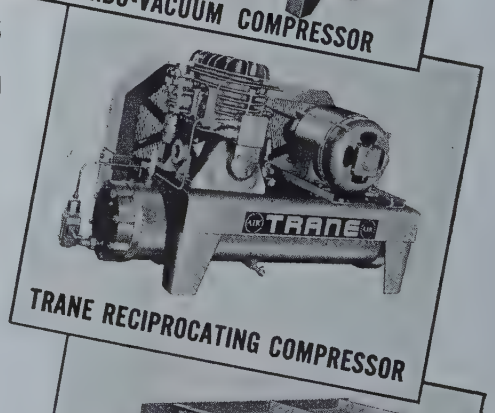
New TRANE refrigeration helps make perfect carburetors



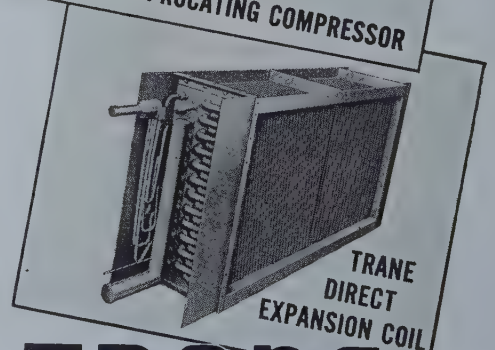
200-ton unit undergoing factory test



50-TON TRANE TURBO-VACUUM COMPRESSOR



TRANE RECIPROCATING COMPRESSOR



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THIS NEW TRANE development represents an outstanding contribution to air conditioning progress which greatly simplifies the equipment arrangement on large jobs. Available in 50, 70, 100 and 200-ton sizes. Easy to install and place in operation.

Four 100-ton Trane Turbo-Vacuum Compressors furnish the chilled water for air conditioning the carburetor test room of the Wayne Division, Bendix Aviation Corporation, Wayne, Michigan. Other national defense industries are using Trane Compressors for comfort and process work. They're an aid to production schedules.

The complete line of Trane heating and air conditioning equipment includes, in addition to Turbo-Vacuum Compressors, Reciprocating Compressors, Heating and Cooling Coils, Unit Heaters, Convectors, Steam and Hot Water Heating Specialties, Fans, Climate Changers, Self-Contained Air Conditioners, Pumps and related equipment—all of which has a multitude of applications vitally important to American industry as well as many governmental agencies today.

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MANUFACTURERS OF HEATING • COOLING • AIR-CONDITIONING EQUIPMENT • 85 BRANCH OFFICES

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AN ALL-STAR PERFORMER

in TONCAN IRON SHEETS

Dominion Astrophysical Observatory, Victoria, British Columbia

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This year, after a quarter-century of service, came this news: "The dome is in excellent condition. No repairs have been necessary during the 25 years."

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Specify Toncan Iron for all sheet metal applications where rust and corrosion would cause early failure in less resistant materials and consequent high replacement cost. It will win prestige-building praise from your clients.

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* Reg. U. S. Pat. Off.

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One of our most important activities at Republic always has been research. Today's emergency has not retarded this work. On the contrary, it has greatly intensified our efforts.

We are carrying on a relentless and unceasing program directed toward the development of new steels for certain critical defense problems and the improvement of present steels.

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A Structural Glass that is finely-machined —gives you a better job!

HERE IS A TOILET ROOM *in the Hermitage Hotel, Nashville, Tenn., which illustrates the design possibilities of Carrara Glass. Black Carrara walls, with horizontal bands in a contrasting color of Carrara, and Black Carrara stiles and partitions, create a most effective room. Architects: Marr & Holman*

IN toilet rooms, lobbies, public building applications . . . wherever you want to be sure of a quality structural glass job . . . it is wise to select a precision-made structural glass like Carrara.

Only a finely-machined product can assure you that joints will be true and even, without lippage. Only a precision-made glass can be counted on to be absolutely free from warpage. Only a glass that is mechanically ground and polished like Carrara provides maximum beauty and accurate reflections.

Carrara Glass never checks, crazes, fades or stains. It won't absorb odors. It is unaffected by moisture, chemicals, pencil marks. It is easy and inexpensive to keep clean. Its original good looks are permanent. It can be decorated by sand-blasting, fluting, shading, or painting for ornamental purposes. And for special effects, there is a new Suede-finish Carrara with softened surface reflections.

Write for our free booklet "Carrara, the Modern Structural Glass." It contains full information on Carrara's physical characteristics, the colors available, construction details and other helpful data. Address Pittsburgh Plate Glass Company, 2176-1 Grant Building, Pittsburgh, Pa.

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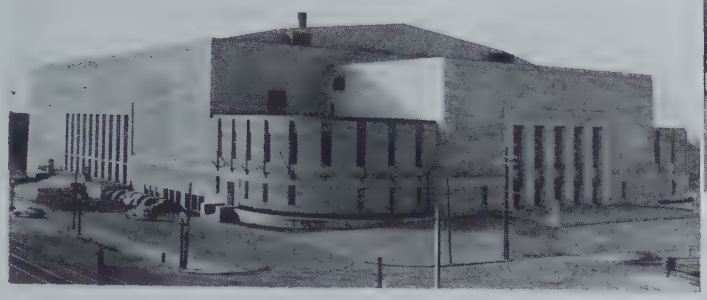
CARRARA

The modern Structural Glass

PITTSBURGH PLATE GLASS COMPANY

BUFFALO MEMORIAL AUDITORIUM, BUFFALO, N. Y.
GREEN & JAMES, ARCHITECTS



VON DUPRIN AT BUFFALO

Fortunate is Buffalo in having completed two important and beautiful buildings for public assemblage just before attention became centered on the defense effort. The Kleinhans Music Hall and the Buffalo Memorial Auditorium have brought the city added architectural interest, as well as superb quarters for meetings and musical events. Fortunate, too, are those who will use these new buildings, for both are completely Von Duprin equipped to assure safe, certain, quick exit.

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KLEINHANS MUSIC HALL, BUFFALO, N. Y.
F. J. & W. A. KIDD, ARCHITECTS
ELIEL SAARINEN, ASSOCIATE

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That's the time to call on TRUSCON...

When you are all wound up in a window problem—or one centering about doors, joists, roofdeck, metal lath or, for that matter any steel building product; that's the time to call upon Truscon. • First, there's the Truscon catalog in "Sweet's". 80 pages of specifications and details upon which thousands of architects, year after year, depend. Just turn to section 15-20 and you will find the answer to practically any steel building product problem. • Then, there's the Truscon sales-engineering organization. Technically-trained men located in 51 offices throughout the country, ready upon a moment's notice to roll up their sleeves and help you. We didn't name it, but architects call it Truscon "at your shoulder" service. • Last, but not least, are the Truscon product catalogs—over 50 of them. Individually bound booklets describing Truscon products or groups of related ones. Marked with the proper AIA-file number they are complete reference works, easily filed and yours for the asking. TRUSCON STEEL COMPANY, Youngstown, Ohio. 51 Sales-Engineering Offices.—27 Warehouses. Subsidiary of Republic Steel Corp.

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THE MONOGRAPH SERIES
RUSSELL F. WHITEHEAD, EDITOR

Published monthly by REINHOLD PUBLISHING CORPORATION, East Stroudsburg, Pa., U.S.A. Ralph Reinhold, President and Treasurer: H. Burton Lowe, Vice President and Secretary; Philip H. Hubbard, Vice President; Francis M. Turner, Vice President. Executive and Editorial offices: 330 West 42nd Street, New York. 50 cents a copy. Yearly subscription $3.00, two years subscription $5.00 payable in advance, to the U. S. A. and U. S. Possessions. To Canada, Cuba, Mexico, Central and South America, $3.50 a year. To all other countries $5.00 a year. Remittances by International or American Express Money Order or by Draft on a bank in the U. S. should be payable in United States funds. Subscribers are requested to state profession or occupation. Changes of address must reach us before the 20th of the month to assure delivery of forthcoming issue. Be sure to give both your old and new addresses. To Contributors: Articles, drawings, photographs, etc., sent with a view to publication will be carefully considered, but the publisher will not be responsible for loss or damage.

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Entered as second class matter, July 8, 1941, at the Post Office, East Stroudsburg, Pa., under the Act of March 3, 1879. Volume XXII, No. 12, December, 1941. Indexed in Art Index.

M O R A L E

A GUEST EDITORIAL BY WILLIAM ORR LUDLOW

Some say we architects are losing our morale and are going to lose it more as architectural work diminishes. Perhaps so.

What is "morale"? I think we commonly mean by morale a spirit of loyalty, devotion to a cause, with a willingness to serve unselfishly. Because we are facing hard times are we going to lose our spirit, our loyalty and devotion to our profession? I don't believe it. I don't think architects are that kind. I think we are going to do something about it. What?

Well, we know that morale is essentially a group matter, best stimulated by common beliefs, common aspirations, common purposes; it thrives on getting together, on acting together in groups. We may agree then that one of the things we are "going to do about it" is to get back of our chapter, our society.

of interest in getting together is that when-

The first thing necessary to maintenance ever the group meets the members *shall be there.* That means two things; first, that the officers shall have provided something attractive and important to come for, and second, that the members shall have some conscience about attending.

My belief is, however, that morale thrives also on good fellowship—we need to play together as well as work together. Morale needs cheerfulness, optimism. The fun part of our meeting program may be as important as the serious part. Some of the important things that we can do are to undertake regional or city planning, public information in the press or on the radio, the study and promotion of standardization, mass production, low-cost dwellings, defense housing, architects in government work, correction of slum housing conditions, reform of antiquated building codes.

But morale requires some other things. One essential is to have the respect and confidence of the public. What the public best understands and applauds is the active participation by individuals or groups in those things that affect the welfare of the community, things such as slum clearance, social betterment, education, clean politics, good government, Red Cross.

Fundamental to the whole matter of morale is the question "What does the group stand for—what has it done—what is it going to do?" I cannot think of what architects *have* done without an immense pride that I am a member of a profession that has given the world the Parthenon, the Taj-Mahal, the Cathedrals of the Middle Ages, many of the public buildings of a former time and of this time, and my mind just fails to grasp the tremendous significance to our civilization of useful and efficient buildings for education, for the sick, for religion, for comfortable homes, for industry. We have had a useful and glorious past, we are justified in all of our pride in our profession. With such a heritage of memory can we lose our morale?

How about our future? Some say we shall not much be needed. There are some things that I am in doubt about, but there is one thing that I am certain of and that is that in the years ahead of us the architect will be needed more than ever he has been in the years past. Look back at the amazing record of the ever increasing use of the services of the architect. Not many years ago a few architects designed a few small buildings in this country, today not less than ten thousand architects have designed hundreds of thousands of buildings.

"Not much needed?" Well, we do not need to be told that in an increasingly complex civilization the great essential is *planning.* We shall plan for our homes, our institutions, our industries. We shall plan for the development of our towns, our cities, our countrysides. This planning will be done by those who are trained for planning.

In the coming re-building of our social structure, there is only one way in which our profession can fail and that way is to allow ourselves to be gripped by fear, by pessimism, by defeatism. We do not have to be told that fears and pessimism have been responsible for the loss of most great opportunities, and for the wreck of countless great causes.

But how can we be defeatists with such a heritage of a great past; with today, all about us, the visible, tangible evidence that the architects are a great body of highly intelligent, highly trained men, rendering indispensable service to our country; and above all, how can we be defeatists with possibilities for a future of opportunities for service, greater and more splendid than we have ever known.

Our morale shall not fail!

A SMALL BASE COMMISSARY CONTAINING STORES, BARBER SHOP, ETC. FOR THE MILITARY COMMUNITY

TROPICAL ARCHITECTURE

BY CARIBBEAN ARCHITECT-ENGINEER, NEW YORK

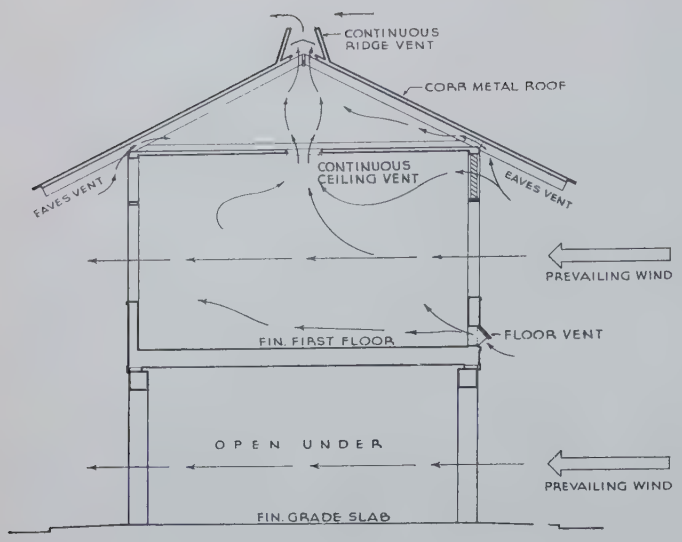
BASED ON AN INTERVIEW WITH RALPH T. WALKER, ILLUSTRATED WITH DRAWINGS BY CHESTER B. PRICE

When the announcement was made some months ago that designs for perhaps the biggest construction undertakings of the Defense program—namely, the advanced island bases leased from Britain to protect the Eastern Coast of North America from Newfoundland to the Caribbean—had been entrusted to four architectural firms with their engineering associates, the significance of this arrangement was not generally appreciated. The decision by the War Department to proceed thus rather than to undertake the whole job itself was based on a desire to utilize the most competent professional skills available, and implied recognition that the complex problem of transferring a substantial population from the temperate zone to a tropical area involved many important considerations other than military.

The southernmost group of bases centering around Trinidad was awarded to Caribbean Architect-Engineer, made up of the architectural firm of Voorhees, Walker, Foley & Smith, and the engineering firm of Parsons, Klapp, Brinckerhoff & Douglas.

Division of the work between the two collaborators was as might be supposed. The engineers were to take care of the heavy utilitarian construction and the more purely technical arrangements; while the architects were to be concerned with the design and scientific planning of the buildings and communities to accommodate the military population. Both the architects and the engineers of course worked closely with the military men assigned to the project.

The problem confronting the architects was to provide not merely shelter but to include facilities for a wide enough range of community activity to insure against deterioration of morale. All the arrangements had to be developed with full consideration for the tropical climatic conditions. The nerve-wearing effects of continuous heat, to which is added the extra irritation of an extended rainy season, the primitive jungle back-



DIAGRAMMATIC SECTION
SHOWING AIR CIRCULATION

ground with its insistently depressing quality and its exotic and sometimes deadly animal, plant, and insect life; the necessity for mingling at times with predominating numbers of native-born black and brown peoples of African and Asiatic racial stock—all these are factors of environment to which the white man must be adapted or against which he must be protected.

Obviously the first thing to be done was to make a thorough reconnaissance of the area involved and to accumulate all pertinent information regarding temperature range, rainfall, prevailing winds, terrain, indigenous building methods and materials, etc. Of these things the architects made a thorough study before setting about developing building types. They paid particular attention to observing the practical and ingenious means devised throughout the region by generations of permanent inhabitants to make life comfortable and safe from the elements and against disease. The result is that they have produced a series of designs that are not only economical of construction, but admirably adapted to the tropical conditions. This is indeed organic and functional architecture.

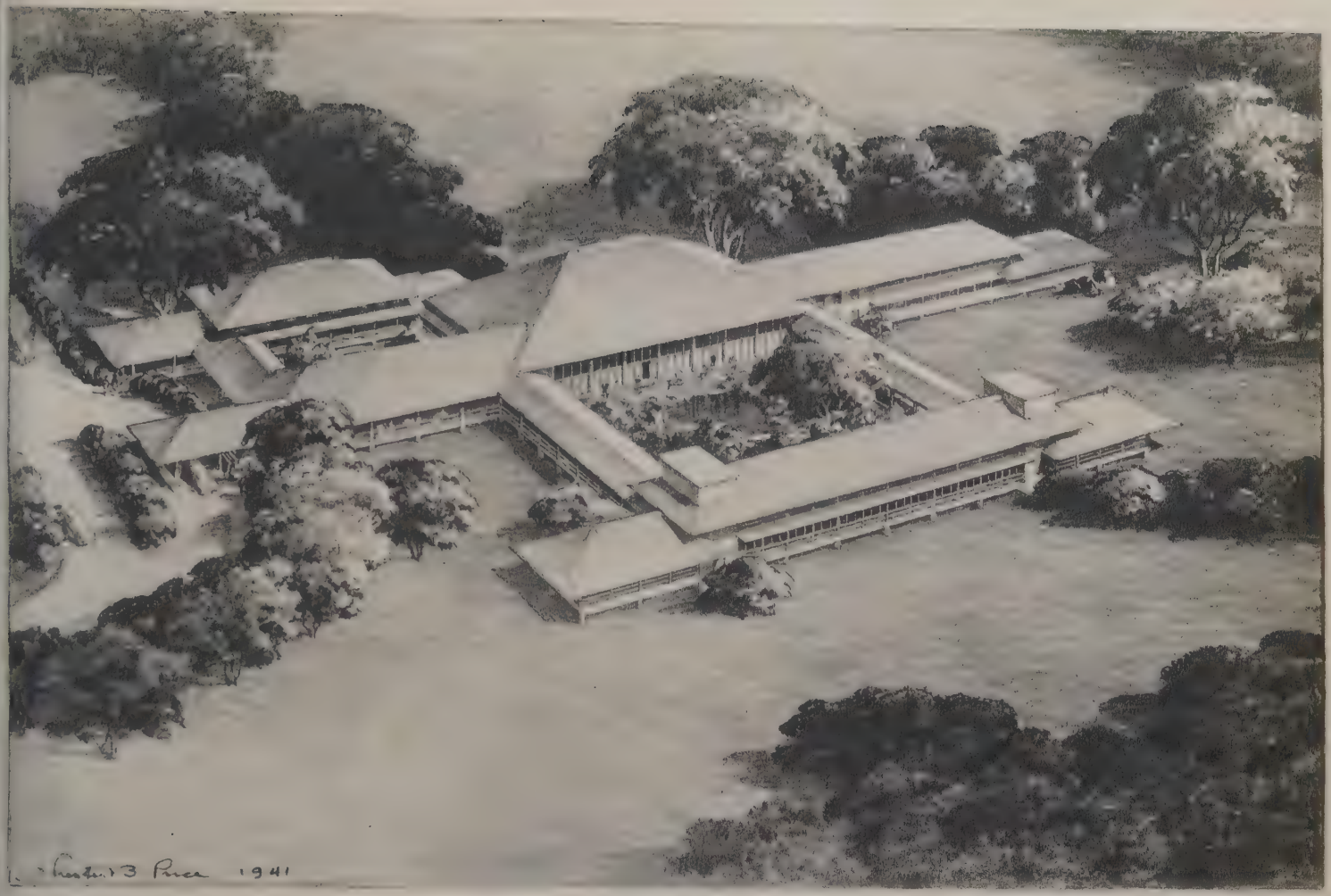
A number of these building types are illustrated in the following pages. They may be taken as representative of the architectural thinking. It will be noted that they are all placed with their long dimension at right angles to the prevailing trade winds, insuring full cross-ventilation. They have wide overhanging eaves and roof pitches designed to shed the voluminous rains and protect the walls and window openings. They follow much of the prevailing construction of the region, raised for the most part well above the ground on stilts, for protection against moisture, termites, and other vermin. Ceilings are high in all living spaces and, as will be noted on the typical section drawing herewith, natural means of ventilation are used to the fullest extent. Wood has been employed for most of the above-grade construction and galvanized corrugated iron coated with tar and asbestos compound for the roofing. This is in accord with local practice and has made for speed and ease of construction by native labor. The supporting posts and the ground floor platform slabs are of concrete. The finished grade is pitched away from the buildings on all sides and concrete ground-gutters are provided of ample capacity to carry away the waters of sudden torrents or prolonged storms. The architects have throughout been fully aware of the need for conserving "critical materials" and have used them only where no satisfactory substitutes could be devised.

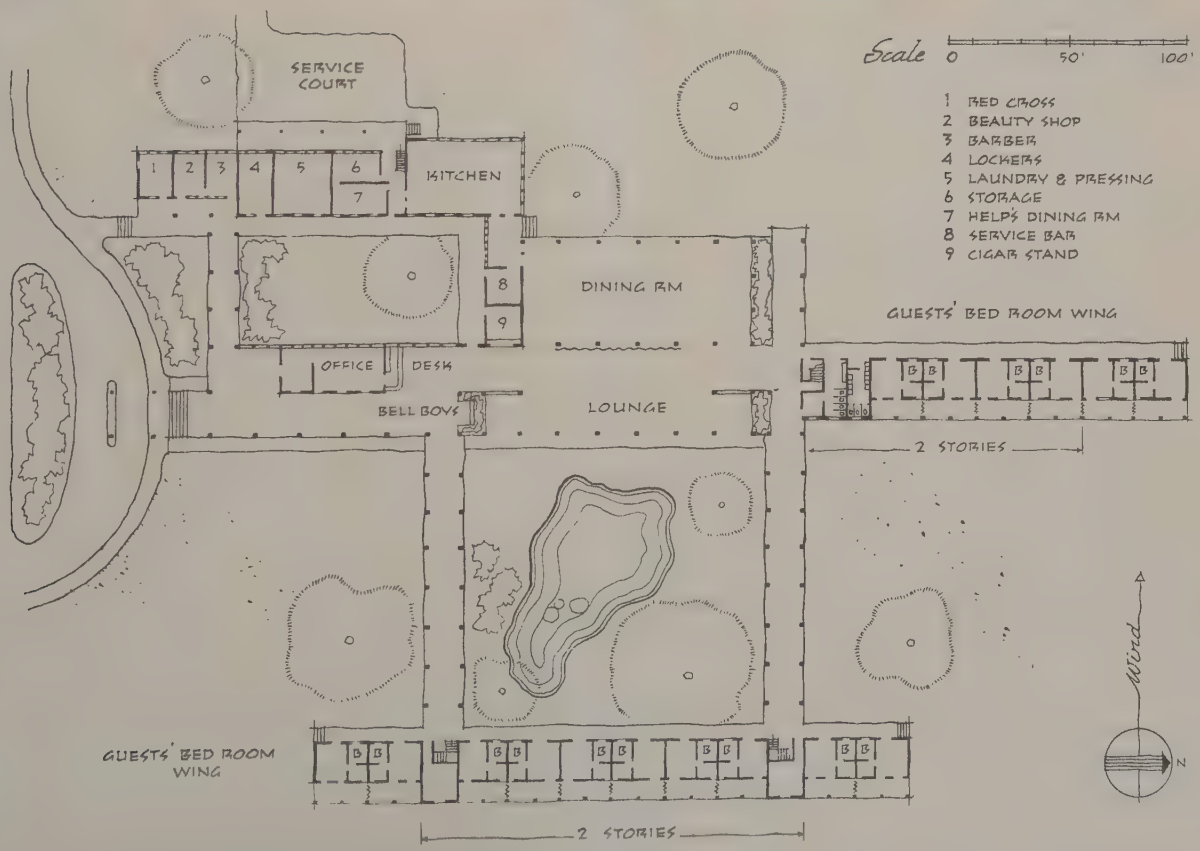
Inside the buildings the treatment is of the simplest with walls unsurfaced and structural members exposed, acknowledging not only the presumably unpermanent nature of the construction and the desirability of economy, but the need to avoid nesting places for vermin. The under side of the broad eaves, which extend out eight feet beyond the walls, is painted a light cream which reflects a pleasant, cool, diffused light into the rooms. Space, which is the tropical equivalent of air-conditioning, has been made as generous as possible wherever human occupancy is intended.

It is naturally undesirable to disclose here in print any information of military significance. It is sufficient to say that the matter of community design has followed good planning practice—guided by all sound considerations, including the military.

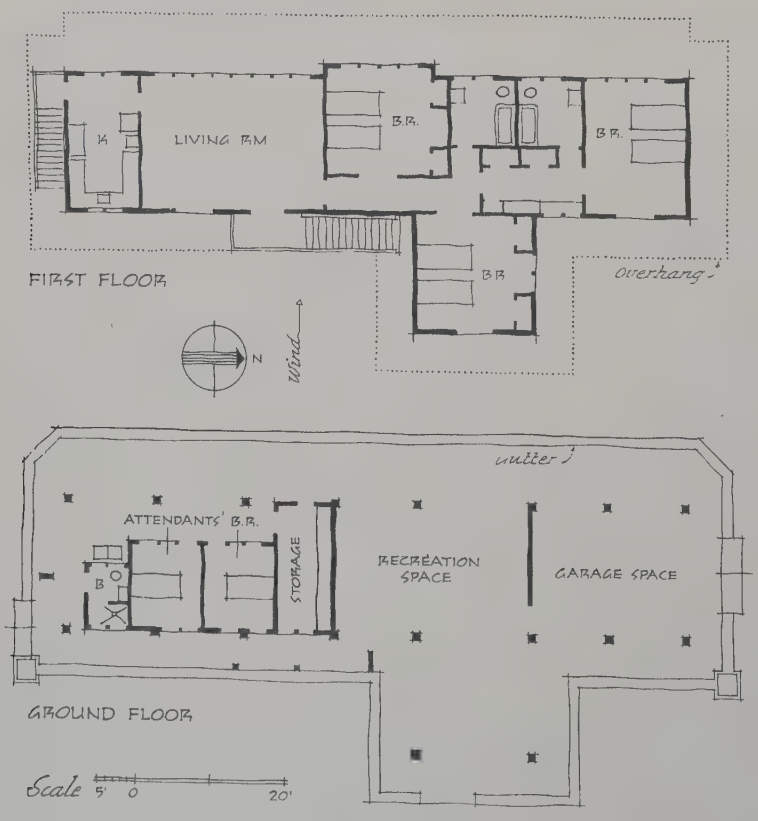
The architects have striven throughout for recognition of the fact that soldiers—even mechanized soldiers—are, after all, human beings with a specific job to do, and that they can do that job better if they are given comfortable, well-disposed quarters in which to live and work. All of us who want the soldiers to do their job well are happy to know that as high a quality of architectural thinking as is evident here was expended on their behalf.

The admirably clear and expressive perspective drawings on the following pages were made by Chester B. Price, as interpretations of the architects' preliminary studies for the several building types.

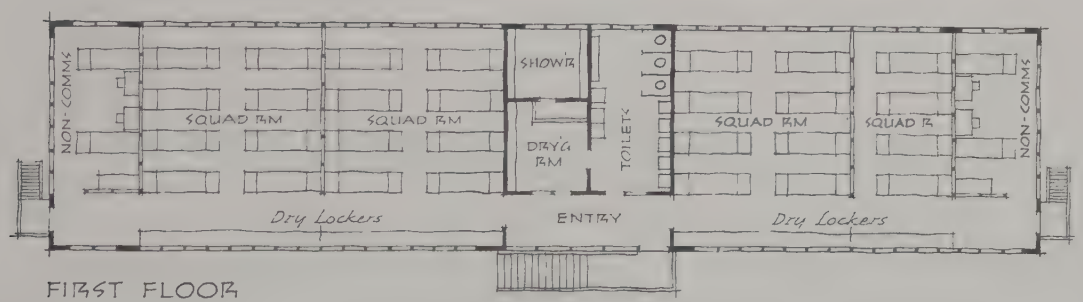




A TYPICAL GUEST HOUSE OR LODGING DESIGNED TO ACCOMMODATE OFFICIAL GUESTS, FAMILIES OF OFFICERS, AND OTHER TRANSIENT POPULATION. EACH OF THESE CAN CARE FOR ABOUT FIFTY PEOPLE



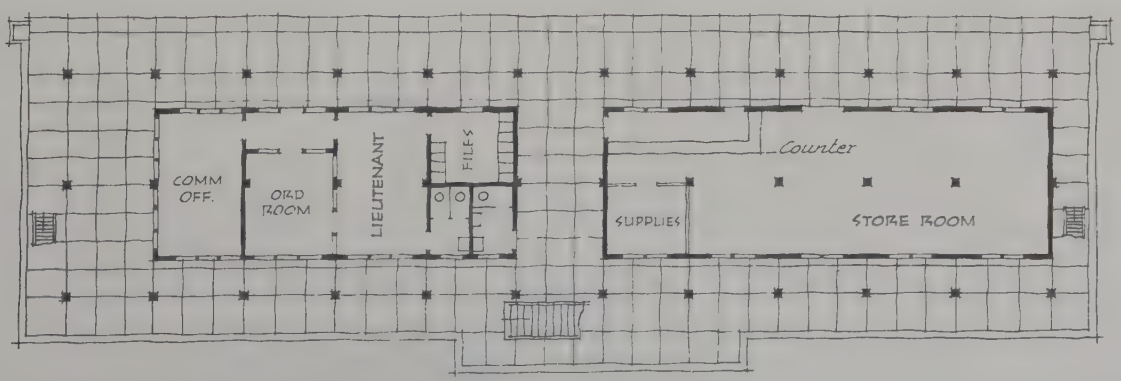
A TYPICAL COMPANY OFFICER'S HOUSE DESIGNED FOR COMFORTABLE LIVING UNDER TROPICAL CONDITIONS. THE PLAN IS AMPLE TO ACCOMMODATE ANY AVERAGE FAMILY LIKELY TO BE QUARTERED AT THE BASE



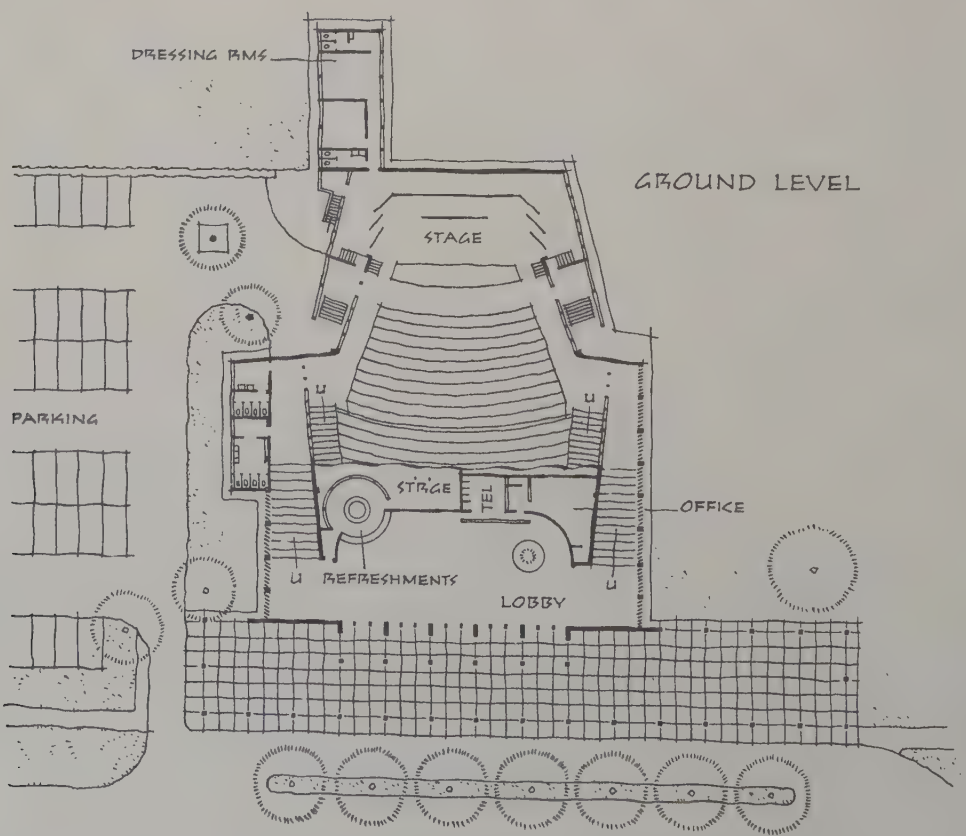
FIRST FLOOR

GROUND FLOOR

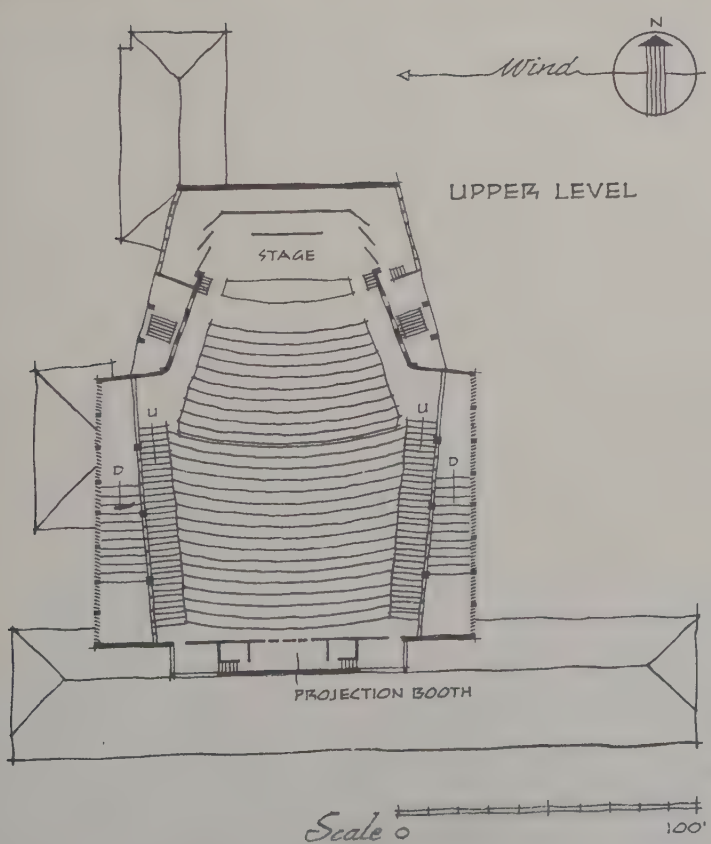
Scale 5' 0 50'



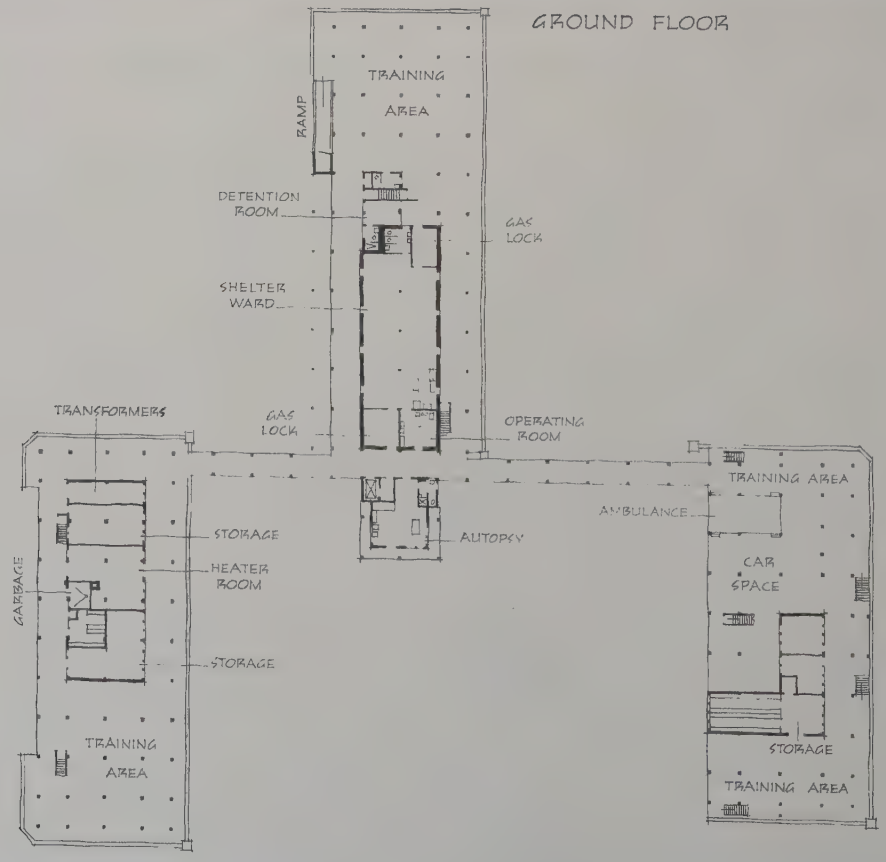
A TYPICAL BARRACKS FOR ENLISTED PERSONNEL AND SINGLE NON-COMS. SLEEPING QUARTERS ON SECOND FLOOR TAKE CARE OF FOUR SQUADS AND FOUR CORPORALS. OFFICES AND STORE ROOMS BELOW



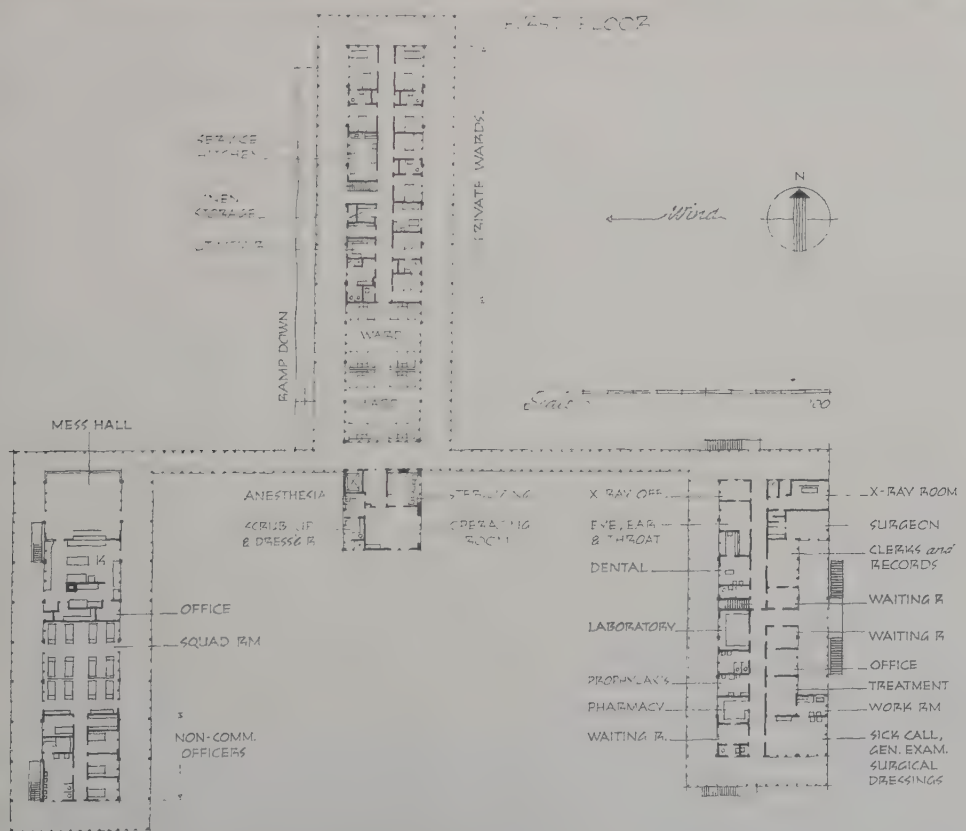
PROVISION FOR MAINTENANCE OF COMMUNITY LIFE REQUIRES FAR MORE THAN BARE PROVISION OF SHELTER. THIS THEATER AND SOME SMALLER ONES ARE PLACED CONVENIENTLY FOR THE MILITARY POPULATION



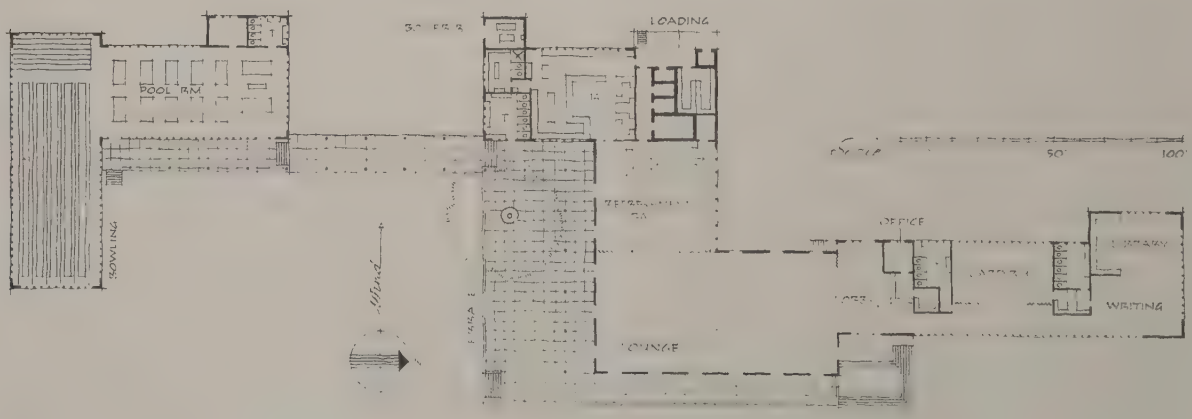
ANOTHER TYPE OF OFFICER'S HOUSE, USED AT ONE OF THE BASE AREAS, IS DESIGNED FOR SLIGHTLY DIFFERENT CONDITIONS BUT ESSENTIALLY THE SAME ACCOMMODATIONS AS THE TYPE SHOWN ON PAGE 740.



RELIGIOUS SERVICES UNDER THE DIRECTION OF ARMY CHAPLAINS ARE AFFORDED A SUITABLE ENVIRONMENT BY THE PROVISION OF CHAPELS LIKE THE ONE ABOVE. PLAN ON THIS PAGE RELATES TO HOSPITAL OPPOSITE



THE TYPICAL SMALL BASE HOSPITAL IS EQUIPPED FOR TWENTY-FIVE BEDS AND HAS ALL RELATED MEDICAL AND SURGICAL EQUIPMENT. SPLINTER-PROOF AND GAS-PROOF EMERGENCY WARDS ARE INCLUDED



SERVICE MEN'S CLUBS ARE A NECESSITY FOR THE RECREATION SO IMPORTANT TO MORALE. THIS ONE IS TYPICAL OF A NUMBER PROVIDED IN THE CARIBBEAN BASES, TO HOUSE A VARIETY OF ACTIVITIES

CAN WE PLAN ACTION IN CRISIS

OR ARE WE DOOMED TO MUDDLE THROUGH?

BY TALBOT F. HAMLIN

The recent priorities order cutting off, apparently without exception, all nondefense building has come as a rude shock not only because of its impact on architects and the building industry as a whole, but also because it would seem to indicate on the part of many of those in power a basic lack of understanding of the possible contribution of the building industry to American life. It also seems strikingly unaware of the actual conditions in and the make-up of the building industry, of its distribution as well as of its importance. With one stroke of the pen hundreds of architects and thousands of skilled laborers are deprived of the means of making their living, and a new and sudden unemployment crisis limited to one chosen group is inevitably produced, for under the present systems at work the absorption of builders and designers into other permitted fields will be, at best, fragmentary and will demand a long period of time.

What is the essential reason for this extraordinary order? Is it the problem of materials? Is it the danger of a labor shortage in defense construction because of the use of too much labor in non-essential building? It can hardly be the latter, for so far as I have heard construction companies have been able to run up defense factories with unprecedented speed and defense housing groups rise swiftly all over the country; this surely argues no real labor difficulty. Could it be that there are influences at work which hope, by throwing large masses of unemployed building workers on the market, to lower building wages when both taxes and the cost of living are rising? One hopes not. There remains, therefore, as the only possible cause for this action either a present or future shortage of materials needed for defense production—especially of the metals.

It is manifest of course that the defense industry is using unusually large amounts of metals, especially steel, aluminum, and copper. Yet there is little evidence of a real study of the productive potentialities of the country to produce these metals. The evidence that has been brought before the public is vague and often contradictory, and as yet no definite figures of the defense requirements or possible production have been brought forth to justify any such sweeping order. In other industries production has been ordered reduced in amount, but only the building industry seems to have been picked out for wholesale, sudden, and unprepared-for slaughter.

One wonders if this is really the most intelligent way to go about obtaining the necessary materials for defense production and building the necessary morale in the American people. Would not some form of rationing serve equally well and allow time for the tremendous displacements inevitable as well as for careful study of the possibilities latent in new substitute materials? Surely our boasted American ingenuity should be given an opportunity for studying all the possible methods of construction that do not use required materials or use only the minimum amounts of them. Either conditions with regard to materials in this country are much worse than we have been permitted to know, or else this order is thoughtless and highhanded.

The problem has two sides: the effect on the community as a whole and the effect on the building industry. The quality and the amount of the effect on the community as a whole will depend largely upon what is deemed essential defense construction. There is much work of a public nature crying to be done, which although but distant-

ly related on the surface to defense is certainly not luxury building and may be essential to community life and development. School buildings for example; many existing schools are obsolete and dangerous and make successful modern education a difficult if not an impossible matter. Shifts of population make new schools in new areas a constant need; are they to be considered essential for defense?

Housing not only for the lowest income groups but also for the middle income groups needs an enormous and constant amount of construction merely to keep pace with obsolescence. Are we suddenly to stop all housing work except that in areas where new defense industries have been placed? Will the cessation of effort to house people better in an old longstanding community really assist construction of new defense housing groups? Personally I doubt it, for the defense housing groups are apparently arising as fast as they can be designed and financed.

And what is obviously true of government and government-assisted housing and of schools is true only in a lesser degree of much other work—of many medium-cost houses, of buildings for charitable institutions. of hospitals. We had begun a most encouraging drive toward the creation of communities that would, because of their general excellence, be object lessons in what democracy can accomplish. To bring this effort to an untimely even if temporary end without the deepest and most painstaking consideration is to undermine one of the great means toward building popular morale.

It is not that one would wish the defense effort hampered by unnecessary building; it is merely that one looked for a more imaginative as well as a more realistic attack on the problem. How many reinforcing bars does it take to make a gun, and how many nails to make an airplane engine? Sacrifices would be made willingly if not eagerly if the building industry and the community could be convinced that they were making their sacrifices for a real need and not merely as a result of official thoughtlessness or stupidity.

The effect on the building industry also is important. It is unthinkable that Washington believes that thousands of skilled architects and draftsmen and tens or hundreds of thousands of skilled laborers in the building trades form a pariah class to be deprived suddenly of their means of livelihood by an arbitrary act. We doubt if much consideration was given to this fact at all, yet that in brute reality is the actual result. Already the effects are felt. Draftsmen and architects who have been busy and hopeful are suddenly workless and perturbed, not knowing what the future holds for them. And in the cities, especially the older and larger cities, the number of unemployed building-trades people is steadily rising.

This fact is of course partly the result of the dilemma of the decentralization of industry that has taken the country unawares; where architects and the building trades have congregated in the past, there precisely is the least of the new defense work. Again and again, although there has been a great deal of shifting, new local sources of labor have been developed, leaving the older, more experienced, more skillful people without work and, unless means are taken immediately to ameliorate the situation, without apparent hope. Here is a body of people, both designers and builders, trained, imaginative, with just the kind of technical and manual skill to be of the greatest use to the country as a whole, thoughtlessly exposed either to the necessity of quiet starvation or else of a complete change in their profession or work. Even at the best—even if all suddenly changed over from being architects or bricklayers or carpenters into becoming engineers' draftsmen or workers at defense machines—the result for the country would be little short of disastrous, for it would mean the disintegration of that one profession and that one industry for which there will be the greatest need the moment the emergency is over.

Besides it is manifest that no such complete transfer of personnel from one walk of life to another is possible. Little by little the necessary factories and housing groups for our defense needs will be completed—and at most their design is requiring only a portion of the professionally trained architects. As the campaign draws nearer completion the need for designers will become less, not greater, and it is clear that there are many architects who will never be absorbed into the defense effort—just as there are many building-trades people who can never find employment in camps or defense factories or defense housing groups—just as there are many too old to serve in the military forces. Many architects will close their offices, permanently or temporarily; many who must work to live will leave the profession for other fields of effort. In any case

the profession will be the loser, and when the emergency is over the country will be faced with a sudden disastrous shortage in trained technical services of the utmost importance.

Can nothing be done to change this gloomy picture? Must the building industry accept this ruling without protest? Surely not. Already protests against the priorities ruling have been many—from real estate interests as well as from the building industry. Yet so far (I write this early in November) the protests have been unorganized, futile, and to a large degree unconvincing. No protests can argue away the fact that a serious crisis exists and that a whole new pattern of material distribution is present in America, with the most profound reverberations in all walks of life——the building industry not excepted. Any protest to be effective must be based first on a full realization of this fact, and second on the equally important idea that the purpose of the protest is no mere matter of self-interest but is based rather on the obvious importance of the building industry to the country as a whole, now and even more in the future.

And the protest must be based on the united effort of the building industry as a whole. Architects alone, contractors alone, labor unions alone may protest as they will, but so long as their protests come only from their own limited groups and embody only the interests of those groups they will be largely ineffective. If, on the other hand, in addition to whatever protests these groups individually may wish to make there is also a concerted action on the part of all together toward a sane and unselfish attack upon the problem, such a protest I think will be most seriously considered.

How can this be brought about? There exist all sorts of vital organizations within the industry—labor unions of large membership and great power, contractors' organizations commanding great capital, the American Institute of Architects and the state societies of architects, as well as the housing and city planning groups. Every one of these should at once, it seems to me, appoint committees with power to correspond with similar committees in the other organizations with the aim of establishing at the earliest possible moment an emergency council of the building industry—a council which should represent capital, labor, technical design, and creation. Such a council should be financed with a sufficient fund to enable it to conduct studies, publish the results of these studies, and exert whatever power wide publicity and true vision could between them possess. It should at once get in touch with the various Washington bodies involved and attempt to develop a cooperative feeling with them rather than use obstructive tactics. It should first of all attempt to find out the real facts of the situation and to discover exactly how much metal is being used month by month, both now and as far as possible for the next few years. It should attempt to correlate these against the supplies available and other permitted nondefense uses, in order that the building industry as a whole might receive the share due it because of its innate usefulness and social values. It should make sure that shortages are not merely like Mr. Ickes's gasoline shortage. This would be only a beginning. On the basis of this information it should then start a technical study of the possible uses of nondefense materials of all kinds, of various methods of building (from *pisé de terre* up) in which metal is minimized, and of various substitute materials for flashing, for tension reinforcement in concrete, for connections, and even for mechanical equipment.

It should then, it seems to me, also institute a study of the actual social value of the building industry and its economic implications—questions dealing with the market for buildings, the necessity for buildings—and by this study try to arrive at some criteria by which the necessity for nondefense buildings could somehow be ranked, so that at least a beginning could be made on some sort of intelligent rationing of building materials, perhaps voluntarily entered into by the building industry. Once such a council was formed, the benefits that might flow from it would be so great that it would very probably remain as a permanent feature even after the immediate need for it had ceased. At the present time there is no organization where all of the interests affected can meet on a common ground with the common aim of national human service. And, too, when the war ends—as some day, God grant, it will —there will probably be an instant call on American designers and builders, on American building materials and building skills, to help in the reconstruction of Europe. If when the call comes an organization such as this proposed council existed, the answer to the call would be both more speedy and more efficient.

Another function of such an organization could be a regional study to find out where

the greatest need for material and personnel lay, and where the greatest supplies were. At present an architect, say in New York, even if he wished to move to a place where his talents would be of greater use and the immediate need for them more acute, has only the vaguest information to go upon—information from friends, accidental contacts with individuals, or the mere locations of projects published in the architectural press. Such an impersonal regional study could do much to give an actual basis in fact on which definite plans could be made. It would remove some at least of the accidents of employment or unemployment.

As it affects architects this crisis has revealed many of the deficiencies in professional idealism. The Institute seems to have been too much occupied with the problems of the individual architect and of individual practice. Despite its committees on city planning and housing matters, on legislation and education, it has so far failed to give to its members the high idealism of all true professional activity—the idealism of service to the nation and the world. In one sense, speaking brutally, it is fairly unimportant whether Jones and Smith close up their offices today and go into advertising or real estate or merely retire, but what is of vital importance is the fact that the particular training and skill of Jones and Smith—a training and a skill that enable them to see a problem large and to see it whole, and to create from that problem the most efficient and beautiful and humanly useful forms, which shall actually be built in definite materials as real things—is something the country needs terrifically and will need with ever increasing intensity. What is important is that this skill shall be available when and where it is needed, and not dissipated, forgotten, and lost. This is the one ground on which the architect can demand to be heard at this hour, and it is the ground on which he can ask confidently for the utmost consideration. If the country is once convinced of this necessity and of the ability and readiness of architects to furnish this kind of design leadership, then, whether buildings are built now or not, some means will be found not only to make use of this skill but also to enable the architect to live during the process.

There has been much talk about a reservoir of designed public improvements to take up the slack of unemployment after the war. In any such project the architects and the city planners should have a preeminent voice, and their services could be employed profitably for years in developing such a project. Whether or not this will be true will depend, at least partly, on the architects themselves—on their readiness to see the opportunity and to seize it, on their ability to cooperate with the other sections of the building industry, on their aggressiveness in asserting their power in order to assure the public the benefit of their skill. The time is short—the time was really yesterday or the day before—and every Institute member and official, every state society member and officer, should be thinking and working toward this end.

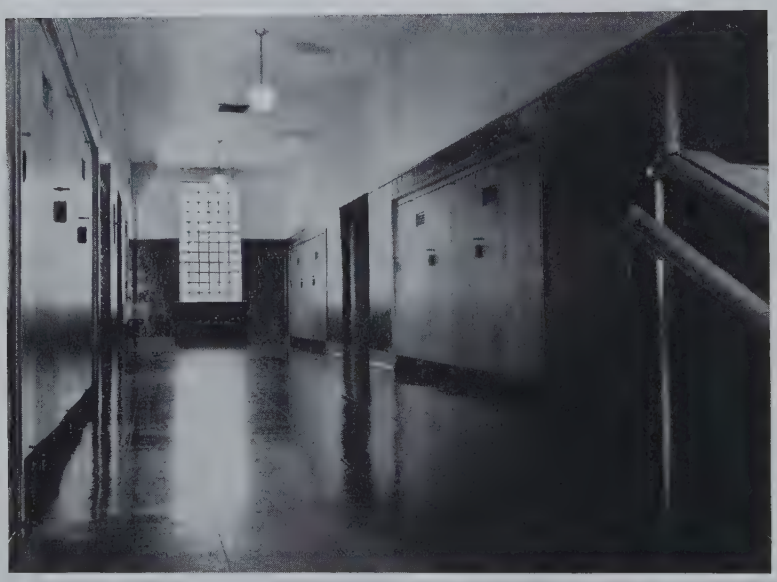
In the meanwhile the architect must do his utmost to put himself in position to render the service that would be required of him. I have spoken before of the blindness of many architects in matters of community planning and community responsibility. I cannot but emphasize the fact again, for it is along the lines of much basic replanning of communities and portions of communities that the future of the architectural profession lies. At a time like this it is useless for the architect to go to the government for permission to design and get built a house to be the plaything of a millionaire; but if the architect comes to the government as the servant of the public, as the man above all others fitted to make the democratic environment a healthy and emotionally satisfactory one, he can demand a hearing and, moreover, expect to be heard.

THREE RECENT BUILDINGS

BY HOLABIRD & ROOT, ARCHITECTS, OF CHICAGO

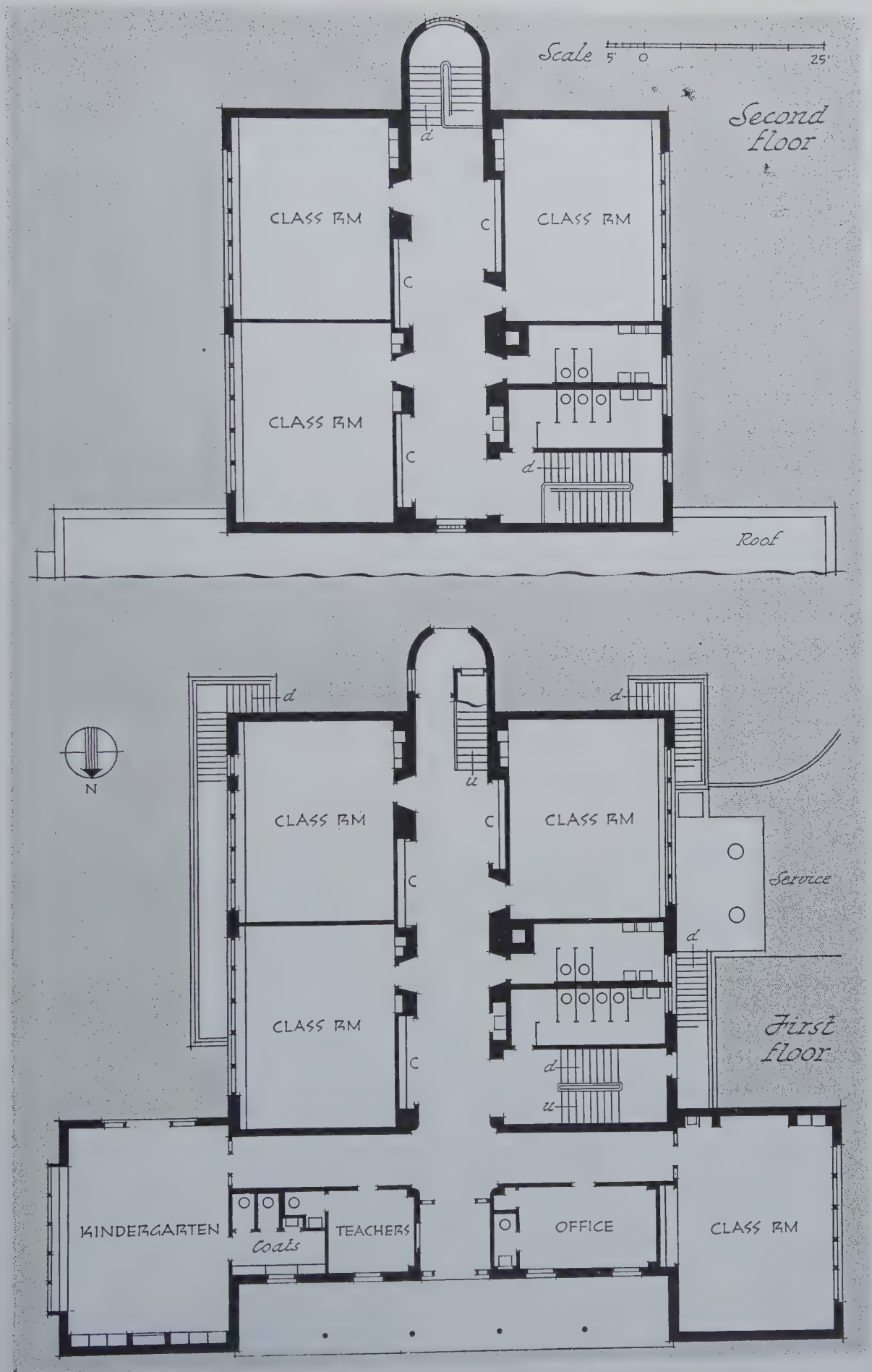
REPRESENTATIVE OF THE FORTHRIGHT MANNER IN WHICH HOLABIRD & ROOT DESIGNS BUILDINGS FOR EDUCATIONAL PURPOSES ARE THE GRIMES SCHOOL AND CLARK FIELD HOUSE AT BURLINGTON, IOWA, AND THE PATTEN GYMNASIUM AT NORTHWESTERN UNIVERSITY, EVANSTON, ILLINOIS; SHOWN HERE AND ON THE FOLLOWING PAGES IN PHOTOGRAPHS BY HEDRICH-BLESSING STUDIO, CHICAGO. THE VIEW (ABOVE) OF THE PLAYGROUND SIDE OF THE GRIMES SCHOOL AND THE CORRIDOR INTERIOR (RIGHT) EMPHASIZE THE IMPORTANCE OF THE CURVED PANEL OF GLASS BLOCK THAT LIGHTS THE PRINCIPAL STAIRWAY OF THIS ELEMENTARY SCHOOL. CONSTRUCTION IS STEEL AND BRICK

GRIMES SCHOOL — HOLABIRD & ROOT, ARCHITECTS, CHICAGO



THE ENTRANCE TO THE GRIMES SCHOOL (ABOVE) IS SHELTERED BY A SEVERELY-PLAIN PORTICO, HIGH ENOUGH TO GIVE AMPLE LIGHT TO THE WINDOWS OF THE ADMINISTRATIVE OFFICES FLANKING THE VESTIBULE (SEE PLAN ACROSS PAGE). AT THE LEFT ARE SHOWN TWO VIEWS OF THE FIRST AND SECOND FLOOR CORRIDORS, BOTH EQUIPPED WITH LOCKERS FOR PUPILS' USE

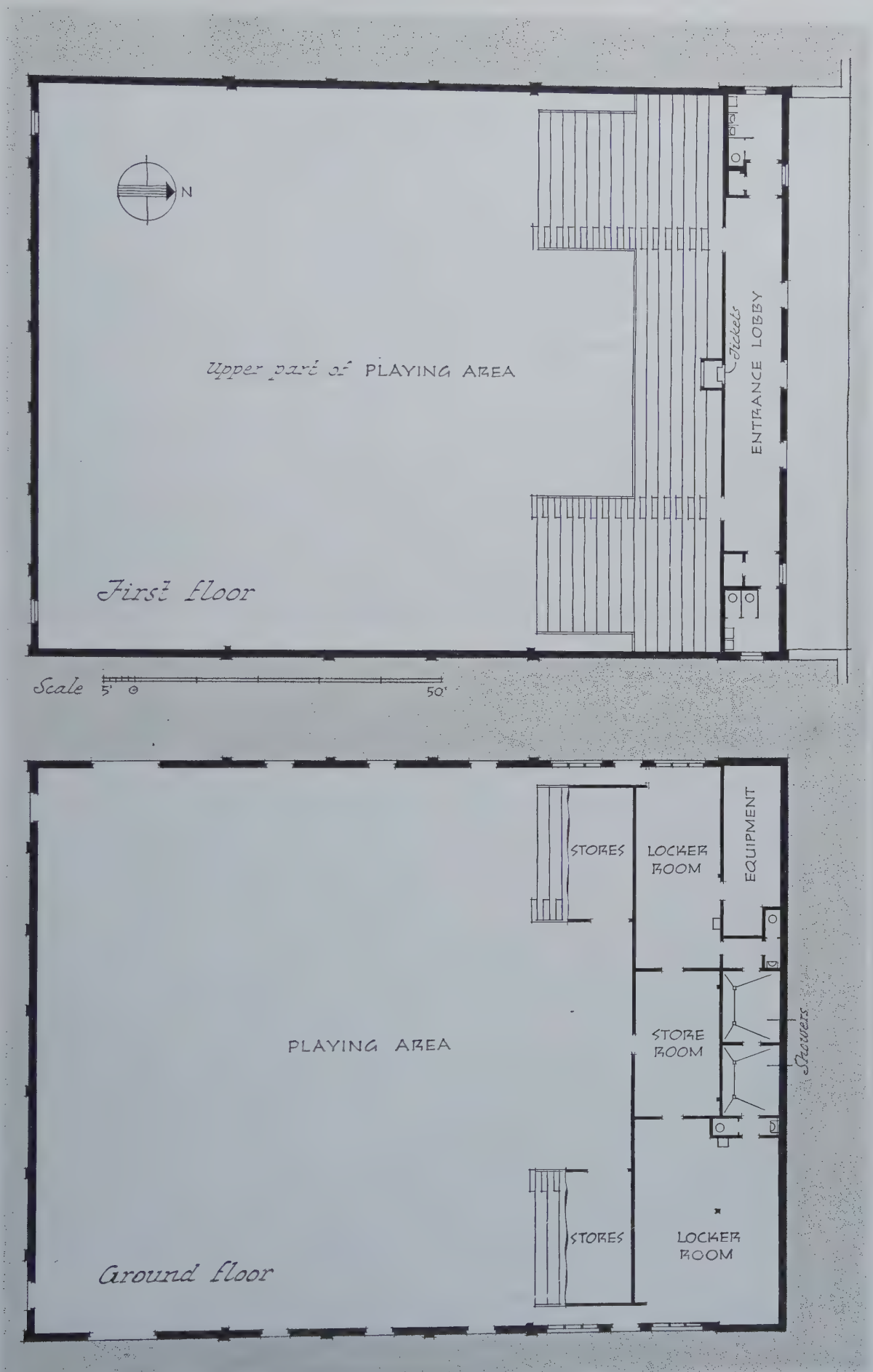
GRIMES SCHOOL – HOLABIRD & ROOT, ARCHITECTS, CHICAGO



GRIMES SCHOOL — HOLABIRD & ROOT, ARCHITECTS, CHICAGO

PARTICIPANTS IN SPORTS HAVE ACCESS TO THE CLARK FIELD HOUSE THROUGH DOORS AT THE LEVEL OF THE PLAYING FIELD (VIEW OF SIDE ABOVE) WHILE SPECTATORS ENTER AT THE UPPER LEVEL (VIEW BELOW) THROUGH DOORS INTO A LONG LOBBY BEHIND THE FIXED VIEWING STAND (SEE ALSO PLANS ACROSS-PAGE)

CLARK FIELD HOUSE – BY HOLABIRD & ROOT, OF CHICAGO



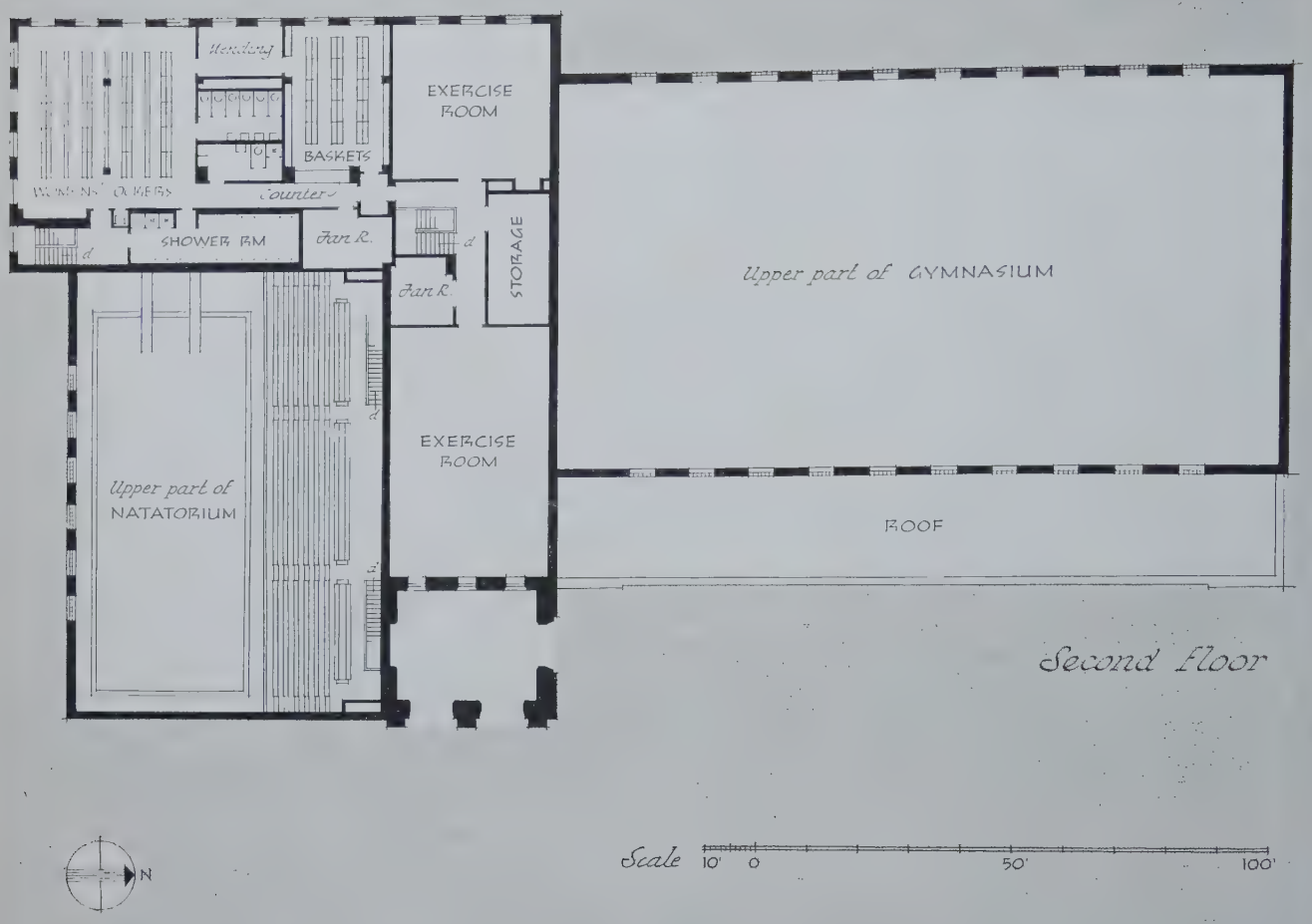
CLARK FIELD HOUSE — BY HOLABIRD & ROOT, OF CHICAGO

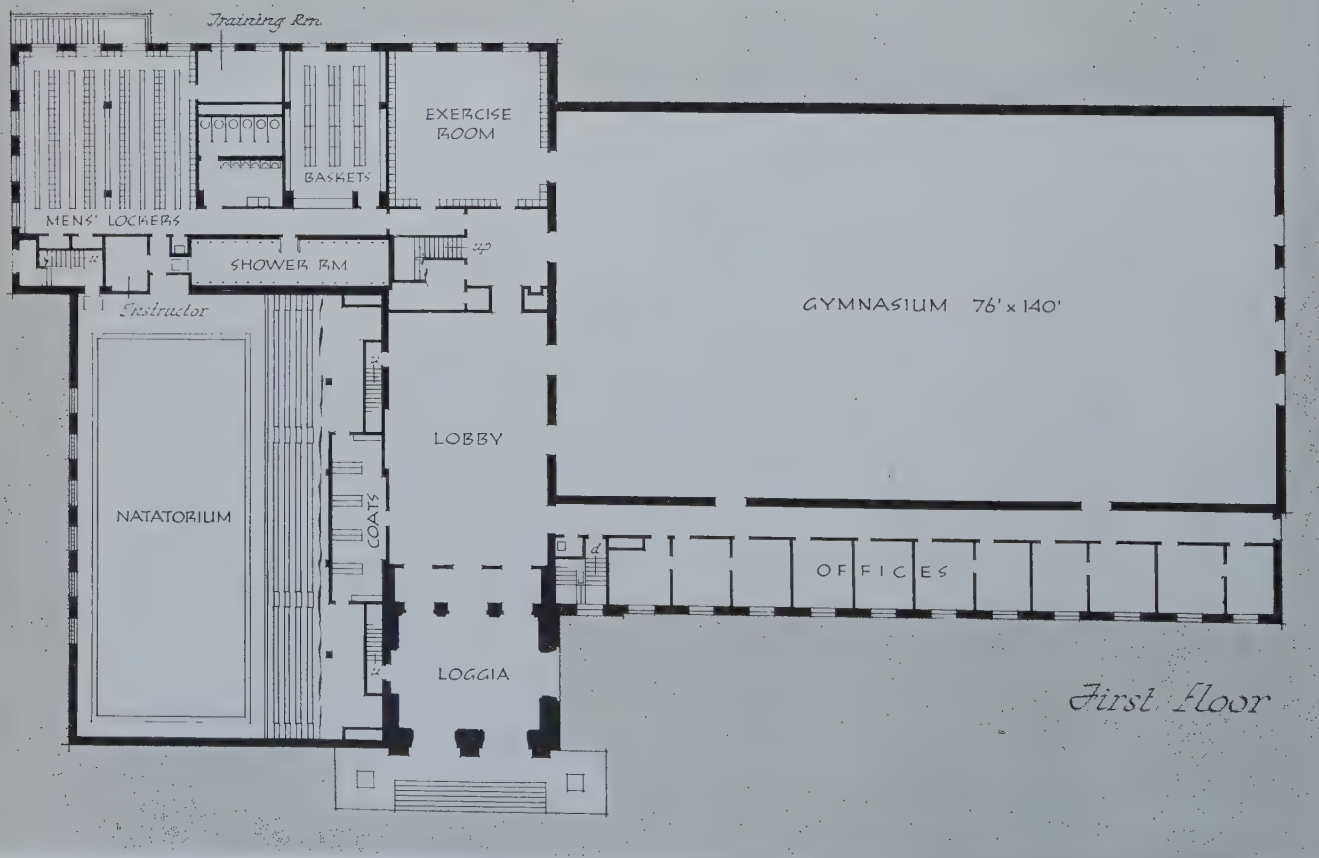
GYMNASIUM AND SWIMMING POOL ARE THE PRINCIPAL UNITS OF THE PATTEN GYMNASIUM BUILDING OF NORTHWESTERN UNIVERSITY (SEE PLANS ON PAGE 758). THE VIEW ABOVE SHOWS THE ENTRANCE LOGGIA

PATTEN GYMNASIUM — BY HOLABIRD & ROOT, OF CHICAGO

ANOTHER VIEW OF THE EAST FACADE, LOOKING BACK AT THE ENTRANCE PORTICO, ILLUSTRATES THE DISTINCTIVE HANDLING OF CUT STONE. THE WINDOWS LIGHT OFFICES (ALL PHOTOS BY HEDRICH-BLESSING)

PATTEN GYMNASIUM — BY HOLABIRD & ROOT, OF CHICAGO





PATTEN GYMNASIUM — BY HOLABIRD & ROOT, OF CHICAGO

OUT ON A LIMB

HOROSCOPE FOR ARCHITECTS AFTER WAR

BY EUGENE RASKIN

These are wild days for architects. Some of us are working our heads off on defense or near-defense jobs, while the rest are running around in circles trying to make intensifying shortages meet the needs of a dwindling private clientele. Few of us, understandably enough, have the time or the surplus mental energy, what with our grueling days, to sit down of an evening and try to form a picture of the conditions of practice that will prevail after the war is over. Yet this is something we must do. If we are to survive as a functioning part of a changed world (and changed it will be) we must make a guess—it had better be good—as to what we shall have to face, so that we may act accordingly. Otherwise we may find that in the general rearrangement of the scheme of things, we have been left out.

The following, good or bad, is one man's guess. The guesser is sticking his neck out on a limb where angels fear to tread, as the saying goes, and he knows it. Your disagreement is warmly solicited. The guess is in two parts, based upon two eventualities.

IF HITLER WINS:

(a) We will go fascist. Expert opinion seems pretty well agreed that even without a military defeat of the United States, a world whose trade channels and propaganda media are Nazi-dominated will force us to adopt the totalitarian pattern. This means State (and Party) control of everything, including architecture.

(b) If you want to practice architecture, you had better be a good boy, with a permit to walk the streets and pursue a profession. Your commissions will come from the State, the Party, officials and favorites—all synonymous under totalitarianism. A "gauleiter" for architecture will dictate design, materials, construction, fees. It will help if you are a "gauleiter" yourself, or a good friend of one. You can forget about private practice.

IF HITLER IS BEATEN:

(a) We shall have to remain armed for a goodly time—perhaps many years—to help enforce the peace, police the world, hold off industrial and financial collapse, and avoid the risk of being caught again with our panzers down. This means continued concentration of our national efforts and consequently continued exercise of emergency controls—priorities, prices, financing, labor.

(b) If you want to practice architecture, you might as well recognize that the Government, directly or indirectly, will be your principal client. The private citizen, as is already becoming evident, will stand little chance of building for purely private purposes. You will do well to get into some field where activity is likely—defense housing, factories, camps, fortifications, etc. A good friend in the right spot will do no harm. You can forget about private practice.

This does not mean to say that one outcome is no better than the other. No sane and feeling human can fail to appreciate the world of difference between the two. Nor does it mean that the architect as a creative artist will be washed up. Society will always need the special abilities of the architect—analysis, imagination—and will make a place for him, even though his specific role is far different from that he plays today.

A SUITE OF SHOWROOMS

DESIGNED BY DARVEED, INC., OF NEW YORK, FOR

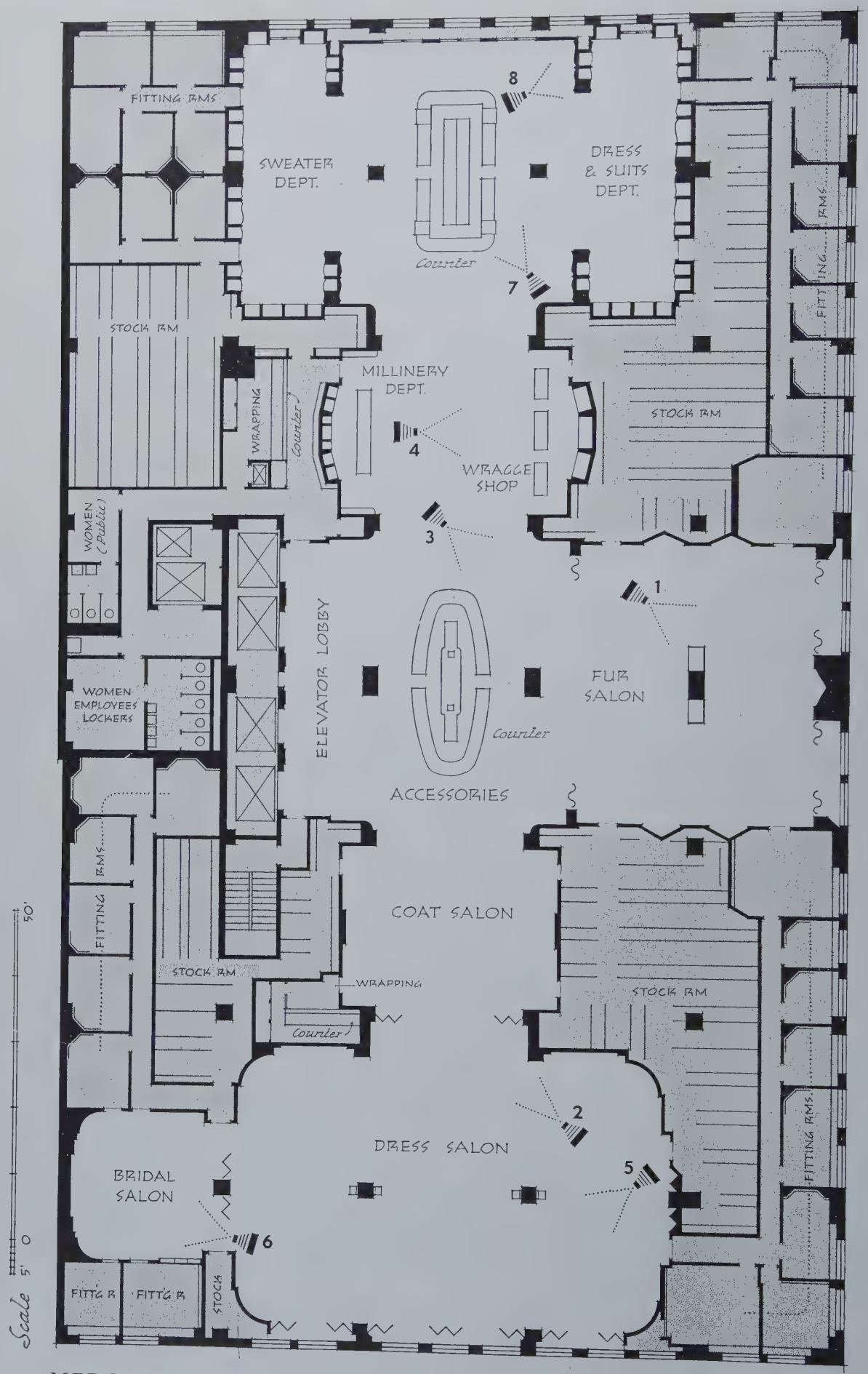
NEIMAN-MARCUS DALLAS, TEXAS

1 THE LUXURIOUS SETTING FOR MERCHANDISING FURS AND EXCLUSIVE LINES OF WOMEN'S APPAREL SHOWN HERE, OCCUPIES THE ENTIRE SECOND FLOOR OF THE NEIMAN-MARCUS SPECIALTY SHOP, RATED AMONG THE THREE TOP-PLACE STORES OF ITS TYPE IN THIS COUNTRY. ABOVE: FUR SALON MERCHANDISING BACKGROUND—RENE C. BRUGNONI, ARCHITECT

VISTAS THROUGH THE SUITE ACCENTUATE THE SPACIOUS TREATMENT. THE PRINCIPAL ROOMS ARE CONNECTED BY SPECIALIZED AREAS SUCH AS THE COAT SALON ABOVE (SEE PLAN ON PAGE 762). ADJACENT TO THE SALES AREA AMPLE FLOOR SPACE WAS RESERVED FOR STOCK AND FITTING ROOMS

2

AND T. H. ROBSJOHN-GIBBINGS, INTERIOR DESIGNER, NEW YORK

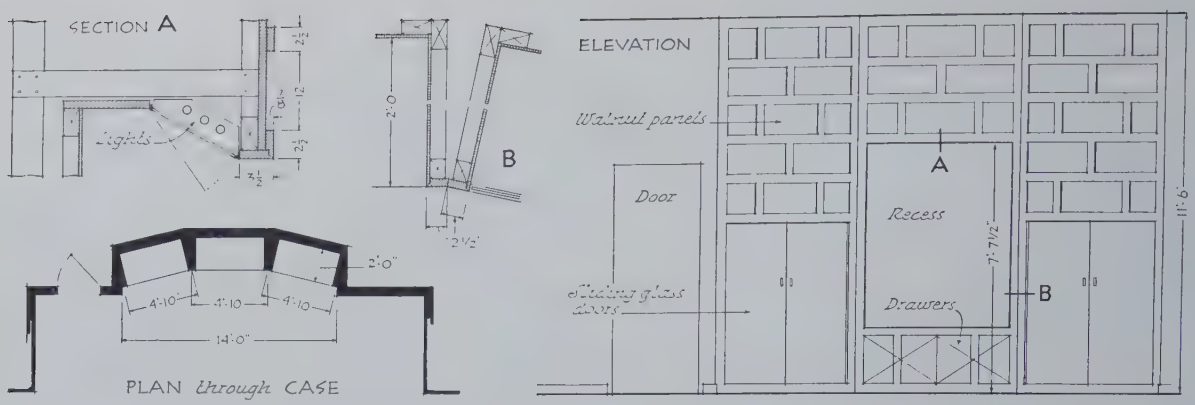


MERCHANDISING BACKGROUND—RENE C. BRUGNONI, ARCHITECT

IN THE BEIGE-AND-GREEN FUR SALON A DOUBLE DISPLAY UNIT OF MIRROR AND GLASS SCREENS FACES THE ELEVATORS. DAYLIGHT IS ADMITTED TO THIS SUITE FROM THREE SIDES AND, IN ADDITION, AN ELABORATE INSTALLATION OF HOLOPHANE AND CENTURY FIXTURES LIGHTS THE SALES AREA AND SPOTLIGHTS DISPLAYS. (PHOTO ABOVE BY PARKER-GRIFFITH. OTHER PHOTOS ARE BY ELWOOD H. PAYNE)

3

AND T. H. ROBSJOHN-GIBBINGS, INTERIOR DESIGNER, NEW YORK



4 A SPECIALIZED SALON CORRESPONDING TO THE COAT SALON (SHOWN ON PAGE 761) IS THE SPORTS SPECIALTY ALCOVE (ABOVE) PANELED IN WALNUT. THIS IS IN THE ROOM LEADING TO THE SPORTS APPAREL SHOP (SEE PAGE 766). RECESSED STOCK RACKS ARE PROTECTED BY SLIDING GLASS DOORS

MERCHANDISING BACKGROUND—RENE C. BRUGNONI, ARCHITECT

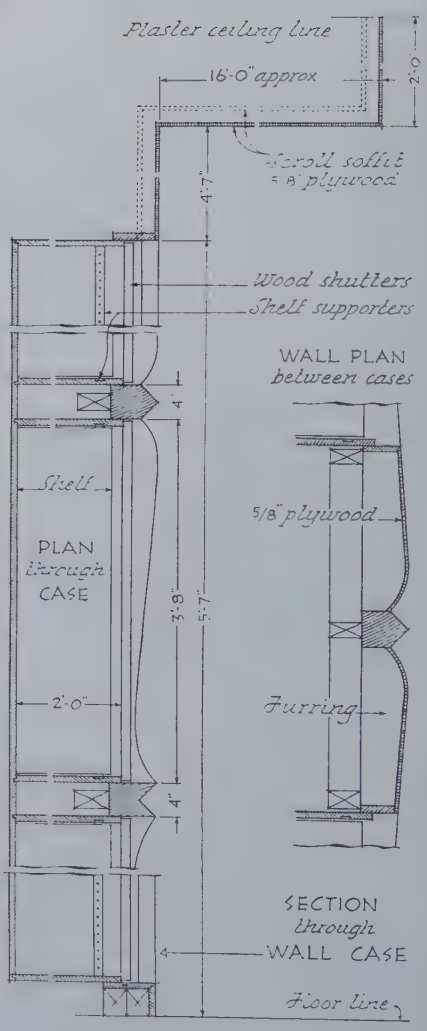
5 THE PRINCIPAL SALON FOR SHOWING DRESSES AND COATS IS FLOODED WITH DAYLIGHT THAT SPARKLES ON GLASS SCREENS AND MIRRORED COLUMNS. THE COLOR SCHEME IS GRAY AND YELLOW

A BEAUTIFULLY FITTED BRIDAL SALON (RIGHT) DECORATED IN PINK AND WHITE OPENS BEYOND 6

AND T. H. ROBSJOHN-GIBBINGS, INTERIOR DESIGNER, NEW YORK

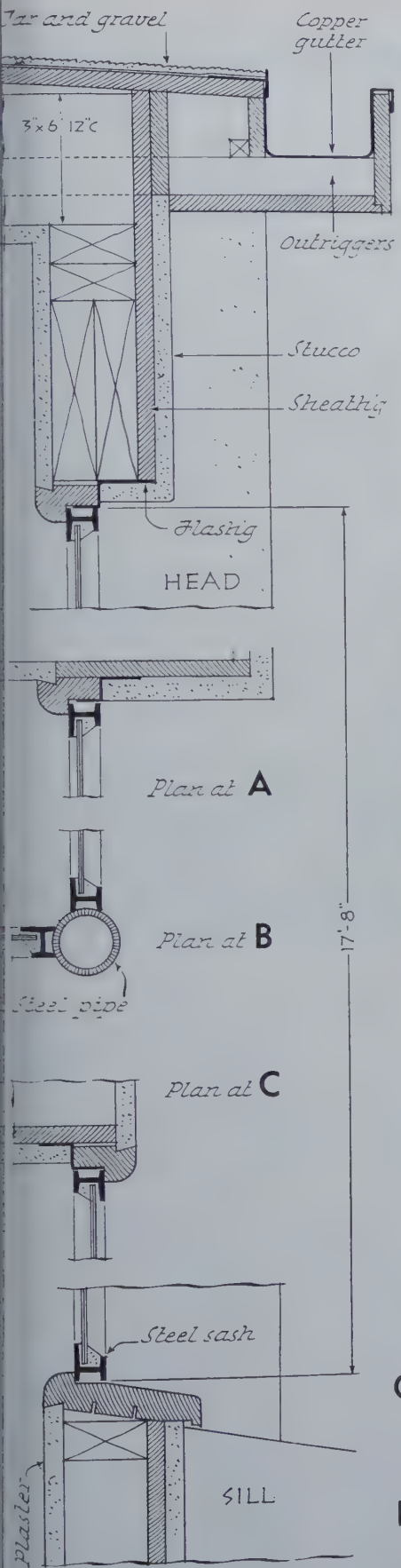
AN EFFECTIVE COUNTER-CASE IS THE FOCAL POINT OF THE SPORTSWEAR SHOP

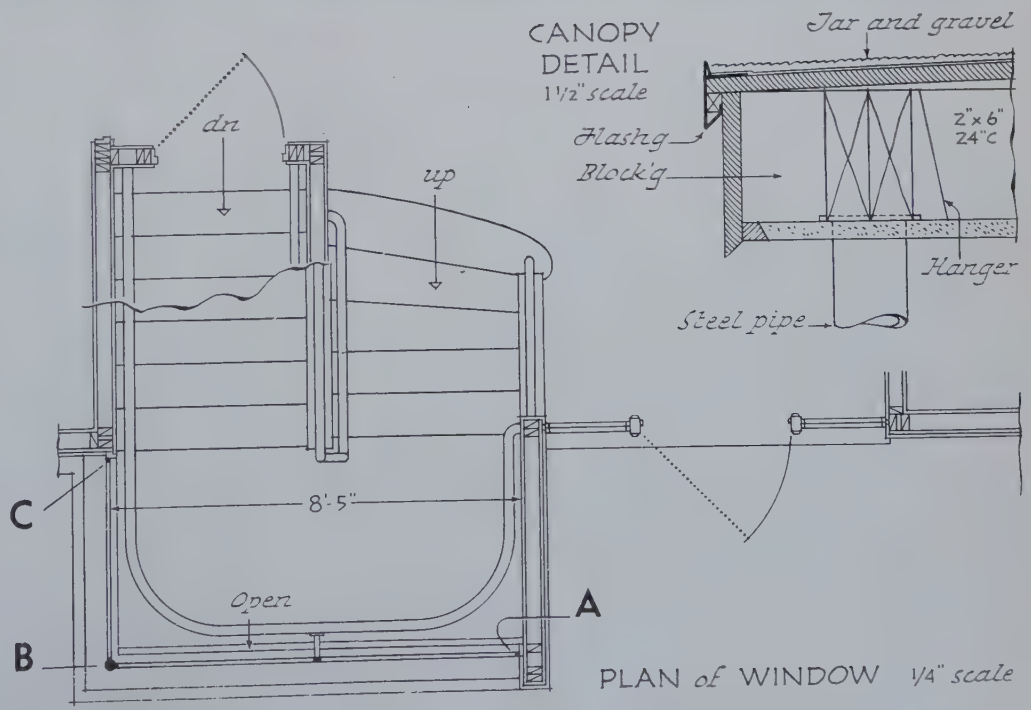
7



8

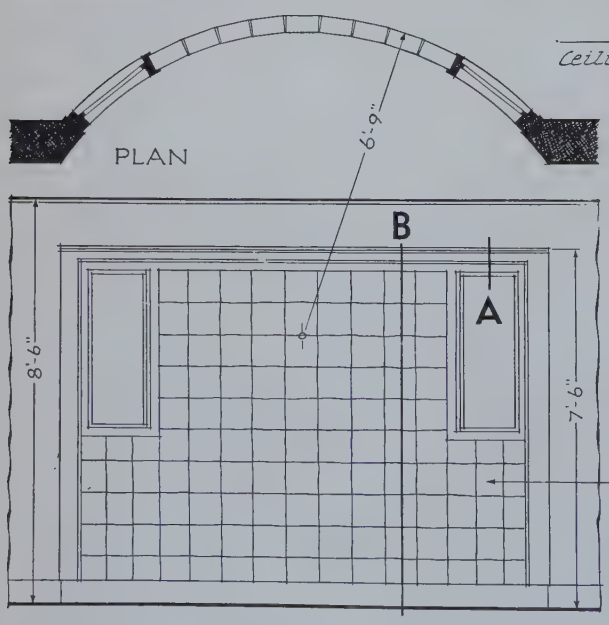
THE DECORATIVE SCHEME OF THIS APPAREL ROOM IS GREEN, YELLOW, AND TAN



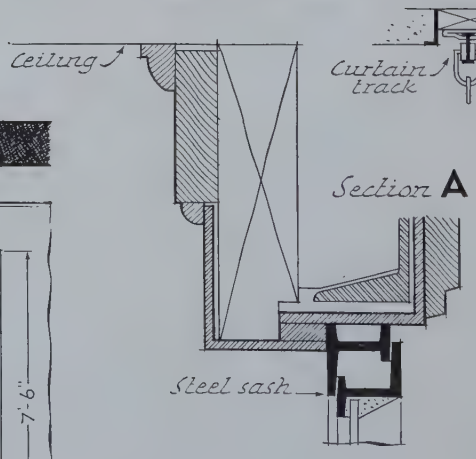


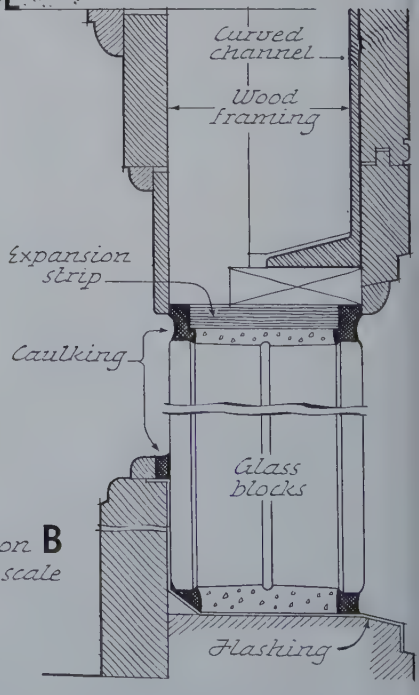
JOHN EKIN DINWIDDIE . . . . . *Architect*

WILLIAM M. BITTASE



ELEVATION
1/4" scale

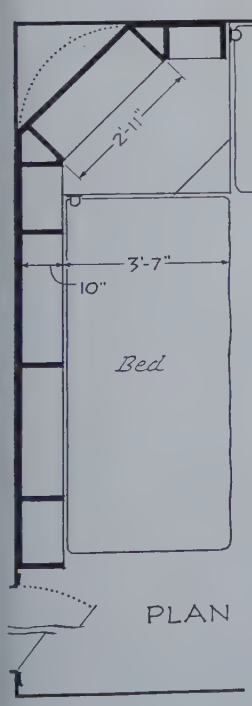




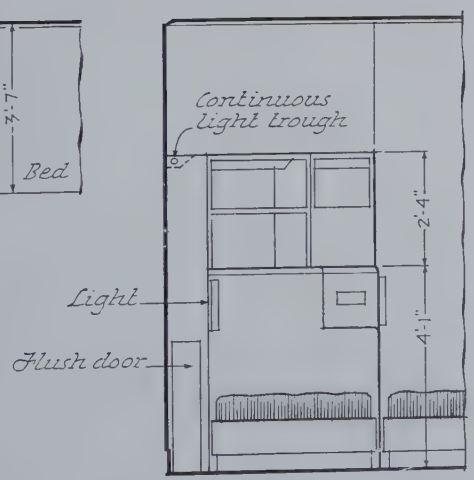
Section B
3" scale

MASSENA & DU PONT . . . . . *Architects*

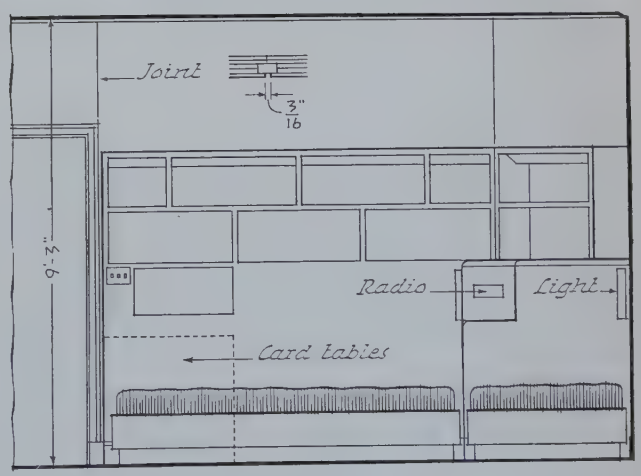
WILLIAM M. BITTASE



PLAN



END

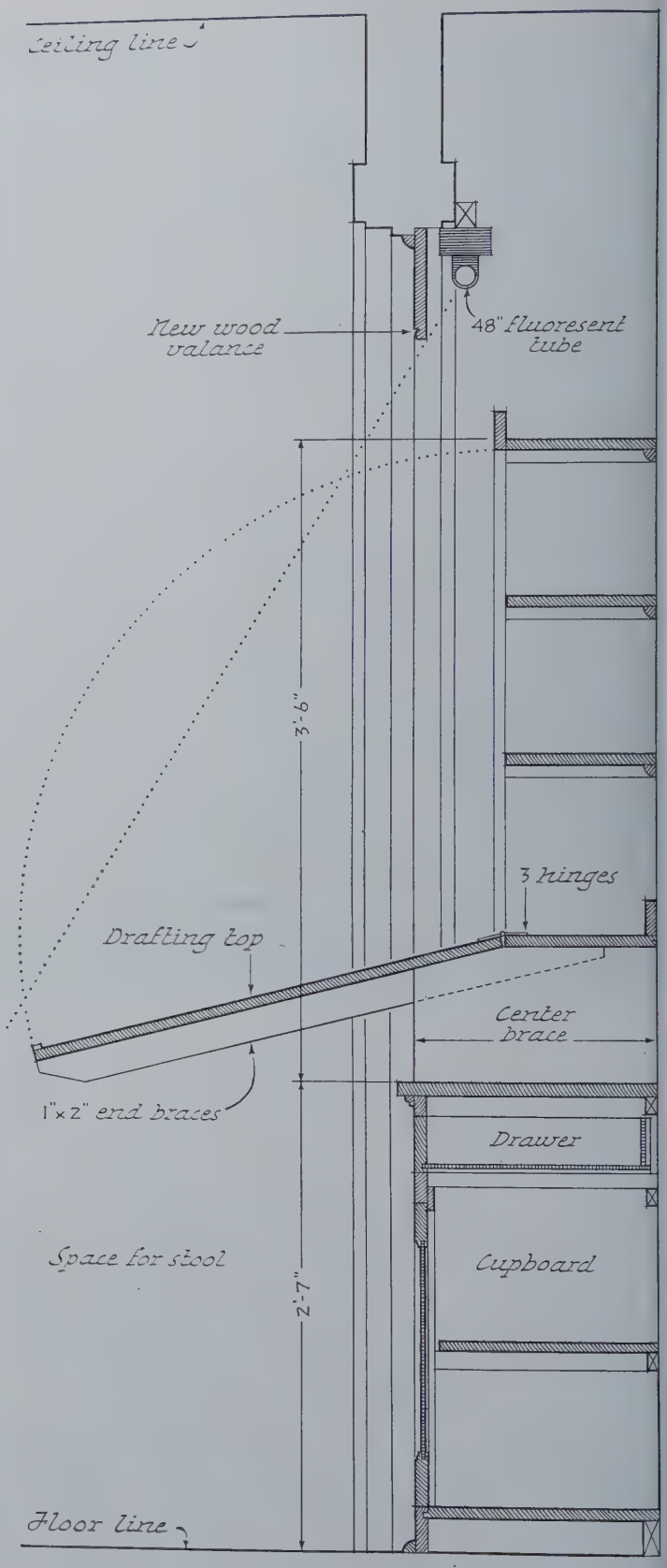


SIDE ELEVATION 1/4" scale

MASSENA & DUPONT . . . . . *Architects*

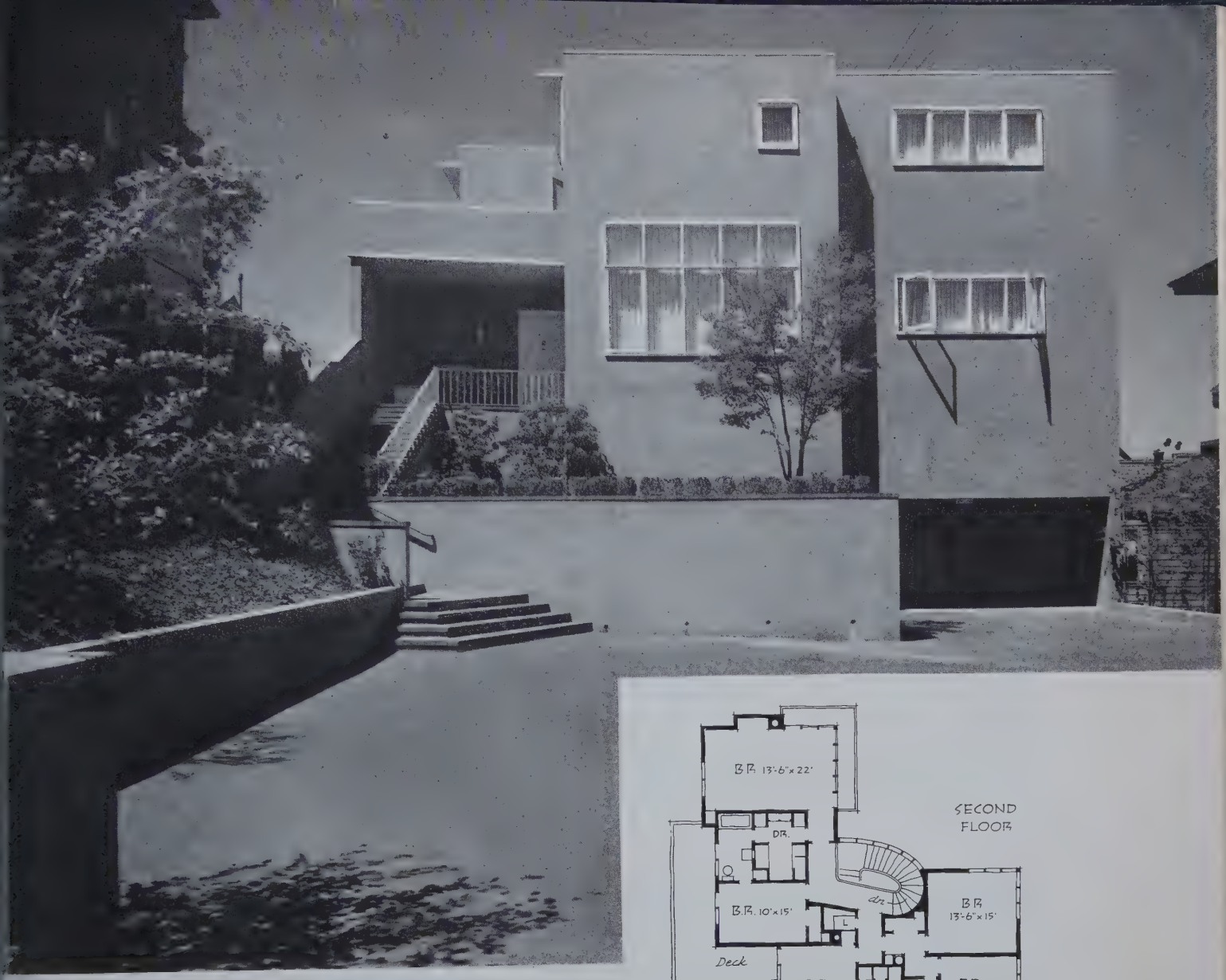
Closed

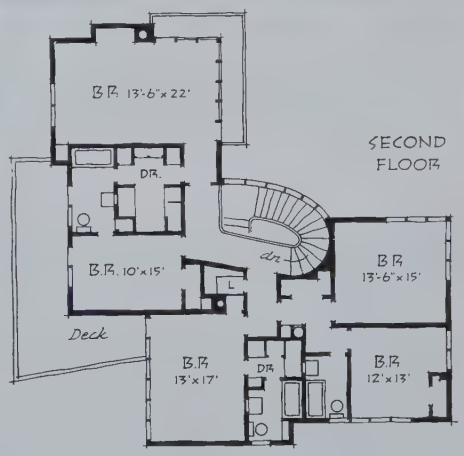
Open

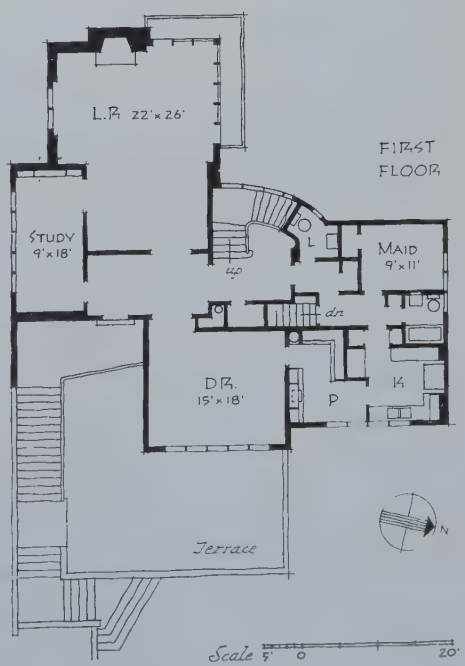


SECTION through CENTER
Scale 1"=1'-0" approx.

Designed by ALBERT W. SPITZ







FOR ONE OF THE STEEP HILLSIDES THAT SAN FRANCISCANS SO FAVOR AS HOME SITES, THE RESIDENCE SHOWN HERE WAS DESIGNED BY GARDNER A. DAILEY. THE PAVED AREA EXTENDING FROM THE STREET TO THE HOUSE ON THE EAST SIDE SERVES BOTH FOR ENTRANCE AND AS A MOTOR COURT. THE TERRACE PERMITS GREENERY IN THE SMALL DOORYARD. THE EXTERIOR IS PAINTED A WARM GRAY, WITH WOOD TRIM A HARMONIZING CREAM. THE DARKER COLORS, MINIMIZING GLARE, ARE PREFERRED BY DAILEY AS "PARTICULARLY RESTFUL IN CALIFORNIA SUNLIGHT." THE HOUSE WAS PHOTOGRAPHED BY ROGER STURTEVANT, SAN FRANCISCO

CITY HOUSE—GARDNER A. DAILEY, ARCHITECT, SAN FRANCISCO

THE LIVING ROOM, LOCATED ON THE WEST SIDE, IS SPACIOUS AND LIGHTED FROM THREE DIRECTIONS

THE STUDY IS ADJACENT TO THE LIVING ROOM AND ITS WINDOWS COMMAND A VIEW OF THE GARDEN. BOTH ROOMS AND THE HALLS ON THE FIRST FLOOR ARE PAINTED CINNAMON BROWN WITH BEIGE TRIM. THE DINING ROOM, ON THE EAST SIDE, IS PAINTED YELLOW-GREEN, CONTRASTING DRAMATICALLY WITH THE OTHER PRINCIPAL ROOMS. THIS RESIDENCE SUGGESTS LEISURELY LIVING AND APPRECIATION OF REFINEMENT IN DESIGN, CHARACTERISTIC OF DAILEY'S TALENT FOR CREATING DISTINGUISHED AND CHARMING HOMES

LIVING ROOM AND DINING ROOM DOORS ARE ON AXIS, OFFERING A VISTA. NOTE VIEW FROM LIVING ROOM

THE STAIR HALL IS PAINTED CINNAMON BROWN, ACCENTUATING LIGHT OF THE LARGE TRANSLUCENT WINDOW

THE SECOND FLOOR OF THE HOUSE IS ARRANGED TO PROVIDE A MASTER SUITE OF TWO ROOMS CONNECTED BY DRESSING ROOM AND BATH; A GUEST ROOM WITH PRIVATE BATH; AND TWO SMALLER BEDROOMS ADJACENT TO A THIRD BATHROOM. SOME OF THE BEDROOMS ARE PAINTED GRAY-BLUE AND SOME ARE DECORATED IN BEIGE AND HARMONIZING SHADES. INTERESTING DETAIL OF ONE OF THE BEDROOMS IS THE DESIGN OF TWIN BEDS ON ROLLING PLATFORMS PIVOTED AT CORNER OF A HANDSOME BUILT-IN CASE FOR STORAGE

AT ONCE DELIGHTFUL AND THOROUGHLY PRACTICAL IN THE SAN FRANCISCO CLIMATE ARE THE BALCONIES PROVIDED OUTSIDE THE LARGE WINDOWS OF THE LIVING ROOM (SEE ALSO PHOTO AT BOTTOM OF PAGE 773) AND THE MASTER BEDROOM. THE WINDOW OF THE STAIR HALL MAY BE SEEN AT THE LEFT IN THE PHOTOGRAPH ON THIS PAGE. BENEATH IT, THE WINDOWS OF THE HALL LAVATORY AND AT A LOWER LEVEL A WINDOW LIGHTING THE SERVICE AREA ADJACENT TO THE GARAGE (SEE EXTERIOR PHOTO ON PAGE 771)

CITY HOUSE—GARDNER A. DAILEY, ARCHITECT, SAN FRANCISCO

TEXTBOOKS AND ACTUALITY

BY SERGE CHERMAYEFF

Elsewhere in this issue appears our necessarily brief review of "Civil Air Defense," one of the many books on ARP which have recently been published. However, the very comprehensive uses of this book by Colonel Prentiss as well as the great detail in which certain measures of ARP are presented make this book interesting for a more detailed examination.

Any work on civilian air defense is required to embrace two mutually complementary objectives. *First,* to establish a philosophy of civil defense and *second,* to outline machinery of organization and technique which follow logically the basic premises and which would make them work. To be successful, such a work published at this time in the United States should take full advantage of all available data. Such a review of data would cover all that has actually *happened* as well as those measures which have been *advocated* by official spokesmen in their published recommendations.

Some of the technical recommendations which Colonel Prentiss puts forward have become obsolete in the course of actual experience. There is inevitably a considerable time lag between field observation of the effectiveness of civil defense and the publication of any text book. As in all technical questions arising out of war the effectiveness of instruments of defense never quite catches up with instruments of attack in an inventive world of technology.

Without wishing in any way to detract from Colonel Prentiss's work, it seems important to draw attention to any glimpse of recent case history, such as is provided by a small pamphlet, "Better Shelters," published by the Association of Architects, Surveyors, and Technical Assistants in London. The points made are specifically in connection with shelters. Colonel Prentiss's book covers a much broader field but the issues are not irrelevant to a general examination. Such points as are made by the A.A.S.T.A. appear important at this stage for the purposes of the American reader inasmuch as they question, as a result of first hand war experience, the basic validity of certain civilian air defense measures which Colonel Prentiss appears to advocate.

When Colonel Prentiss describes the policy of protection of the British Government as "reasonable" he thereby postulates the basis of his technical instructions. This reasonableness, however, still appears open to question and remains to this day a subject for difference, both on principle and detail, in Britain itself. The little pamphlet I have mentioned serves as an example. The authors have been working for the last four years in close collaboration with Professor Haldane, whom Colonel Prentiss quotes in one instance.

This is what they say on shelters in target areas, which happens to be the special subject matter of this pamphlet: "The Government's policy on the provision of shelters is explicit. It is that shelters should only be provided to the extent that is necessary to prevent demoralization of the population and impairment of effort. In putting forward proposals which attach importance to *the saving of as many lives as possible* we believe that we are suggesting something which is fundamentally different from official policy." They go on to say: "But we believe that this is the only policy which will satisfy public opinion and ensure the maintenance of morale. It has been constantly impressed upon the public that every country engaged in war becomes a fortress, that everyone is now in the front line . . . under these conditions the less cynical and humane policy of building bombproof shelters is the only one that will gain the confidence of the people." The pamphlet goes on to dispose of various arguments against the construction of heavily-protected shelters as baseless and disproved by example, and goes on to demonstrate that this official policy has resulted in an insufficiency and inefficiency of shelters, and from there proceeds to outline proposals based on the provision of *adequate shelters for everyone in dangerous areas.*

Their carefully considered proposals cannot be dismissed on grounds of economy, shortage of materials and labor, etc., which have been put forward. They recommend that: communal shelters be built rather than small, individual, scattered shelters; the number of people accommodated be determined by the distance from a shelter and the warning period; this period should be calculated and announced by the Government for every district; every shelter should be fully equipped because the maintenance of morale during air raids depends to a very large extent on the design and equipment of shelters.

What appears to hold good in the light of actual experience and to be diametrically opposed to official policy in connection with shelters, may hold good in many other instances. That Colonel Prentiss is not in entire agreement with certain premises upon which British measures are actually based becomes apparent in his section devoted to gas.

The emphasis he places on the potentialities of gas attack and his obviously profound knowledge of this subject make the list of gas protection measures elsewhere in the book appear completely inadequate. What Colonel Prentiss

suggests in his treatment of gas, (and he gives more space to this subject than I have seen in any other comparable publication), suggests forms of gas attack which, if employed, would render the protection so far advocated ridiculously inadequate.

Nowhere, however, does the author make it clear that the technical data he gives do not necessarily agree with his own findings. A reader merely looking for an immediate rule-of-thumb solution may be satisfied: but those who will want more than this may find themselves either missing something entirely, or getting only a confused picture precisely of those points on which the author can throw the most light. That the author has a far more important contribution to make than the provision of rule-of-thumb stuff becomes again apparent in other parts of the book.

When Colonel Prentiss, for instance, calls attention to the very large number of multi-storied framed structures relatively immune from air attack, which exist in urban communities in the States, he suggests a line of research for a technique of protection specifically American, for which there are no European precedents. Unfortunately, he does not develop the theme. In the case of both gas protection and construction of shelters in existing buildings Colonel Prentiss suggests lines of research which might lead to radical and basic variations in both policy and practice for civil defense as it might be formulated here.

In another section the deep dug-out shelter, a form practically unknown in England, is discussed at some length and opens up a line of inquiry not pursued very far to date, except in Spain.

The section on protection of industrial plants is among the most complete in the book, particularly in connection with organizational and personnel problems. The possible structural protection in industry still remains perhaps the richest field for research. One can only hope that the interesting work done in some defense plants here in the U. S. will be made available in the form of detailed technical information to *bona fide* designers. So far all we have had are tantalizing glimpses in the Technical Press.

The different possibilities for confining the effect of bombs within the smallest possible areas within vast industrial one-room buildings is a subject which has hardly been tackled. The reliance on inert mass to withstand splinter and blast, such as concrete and brick walls, sandbags, etc., seems too primitive. Curtains of mesh sufficient to intercept splinters and dispel the direct effect of blast and suction by reaction to them suggest themselves.

In his brief survey of the history of air war Colonel Prentiss reveals a scientific objectivity which makes the technical information forming the bulk of the book so complete. He accepts the arrival of the last and most effective instrument of war without the scepticism and reservations which distinguished so many of his professional contemporaries in Europe. In reading this part his objectivity appears as unconscious irony in certain places. One cannot help wondering why he records, without comment, the Hague air warfare rules of 1923 while entirely omitting the record of air war in Abyssinia, China, Spain, and elsewhere. A record of "total" war as a concept, made possible by air power, reveals such naively "sporting" gestures as the Hague rules to be no more than glimpses of a futile world long dead.

Equally I feel uneasy when reading the concluding parts of Colonel Prentiss's book:

"The necessity for bomb-proofing, fire-proofing, and gas-proofing of all buildings and utilities, from the city to the humblest home will bring about a complete revolution in the conventional principles of engineering, design, and construction." One has to reluctantly agree that this is probably true in the face of world events, and that we shall have war techniques and legislation as an added burden to be borne by housing everywhere. All efforts to provide a better environment, which is already hampered by so many handicaps, will have this additional handicap to deal with. The author's next comment is even more depressing to planners, architects, and designers. He goes on to say: "More far-reaching than the design and construction of buildings will be the changes necessary in city planning in the future. The first step will be to remove essential industrial plants and vital public service utilities from the cities and to disperse them at safe distances in the rural areas outside the areas they serve.

"The net result would be to reverse the trend towards the building up of large urban centers which started in the 19th Century by the industrial revolution. The tremendous development of motor transportation during the past three decades has already made the congestion of population in large cities unnecessary, and it is now no longer essential to locate factories and cities in order to be near the labor market. With the imperative necessity of removing large industries from the large cities, brought about by the danger of air attack to the whole surrounding population, we may expect to see an increasing trend towards the decentralization of industries to rural areas and small communities."

What Colonel Prentiss does not mention is that the very forces which produced these undesirable characteristics in our planning have also been responsible for the abuse of our conquest of the air. As long as we do not take those measures which he advocates for better reasons than those of war, or imply in those measures a philosophy which cannot accept warfare with the calm professionalism of Colonel Prentiss, we shall have solved nothing. A process of decentralization on the grounds that Colonel Prentiss states would become ineffective just as soon as new weapons were devised to deal with the situation and in some not too distant future one might find one's self reading an equally impeccable textbook about weapons as yet not invented.

From the unequivocal *will* of the first quotation, the one thing about which the author has no doubts, is made clear: *Wars are inevitable.* Writing as a contemporary, objective, military scientist, he does not shrink from far-reaching, unfamiliar implications of his science.

Architects, through the very nature of their calling cannot be pessimistic about the destiny of our race. As long as we can see some of the changes in planning, mentioned by Colonel Prentiss as bettering the lot of humanity, we have better reasons for them. Reasons which might become even better if in a spirit of scientific objectivity, comparable to that of Colonel Prentiss, but directed toward other ends, architects are led to the conclusion that such changes must be made in the name of sanity and not of madness, and in the process eliminate precisely those premises upon which Colonel Prentiss has erected the doleful edifice of his conclusion.

See book review on page 10—ED.

WASHINGTON REPORT

COMPILED BY A. D. TAYLOR OF CLEVELAND

RECONSTRUCTION FINANCE CORPORATION

A major program of construction through the Defense Plants Corporation is continuing. The number of projects for which moneys have been loaned through the Defense Plants Corporation has practically doubled within the past three or four months. To the extent that services of the technical planning professions are required in the development of these projects, such employment is procured only through the officials of the industries to which the money is loaned.

★

DEFENSE HOUSING

Additional funds under the Lanham Act are not yet available, and in all probability will not become available until the Congressional committees have reached definite conclusions as to the future procedure in the Housing Program, based upon investigations of the general housing problem. There seems to be some duplication of effort and lack of full coordination of activities among the agencies functioning in this work. It seems likely that the various agencies now administering different parts of the Defense Housing Program will be combined in one central agency, generally responsible for the program of planning and constructing Defense Housing.

A number of new projects for Defense Housing, as shown in the table on page 780, are being assigned to different government agencies. Sites are being selected for these projects and preparations are being made to proceed with the necessary planning as soon as funds are available.

For those who are specifically interested in procuring the latest and most complete information regarding Defense Housing Projects, reference should be made to the "Defense Housing Construction Bulletin" which provides information on the "Status of Projects under the Federal Works Administrator." Copies of this semi-monthly publication may be procured through the Director of Information, Federal Works Agency, North Interior Building, Washington.

A considerable quantity of Defense Housing is being done done through the Defense Homes Corporation, working in close conjunction with the Federal Housing Administration. Members of the technical planning professions in private practice are to some extent employed on these projects.

★

QMC OFFICES

A number of reports have been published in different local newspapers concerning the prospective development of Ordnance Projects in specific localities, but almost none of these projects have been officially announced.

Releases are published through the Office of the Chief of the Bureau of Public Relations of the War Department, located in the Munitions Building. It is through this office that information is immediately available to the public as soon as the project has been approved by the Office of the Secretary of War for design and construction. For those who are definitely interested in these projects, their names may be placed upon a mailing list to receive news releases of War Department activities and contracts.

At the time of writing of this report, legislation placing the construction activities of the Quartermaster General's Office under the Corps of Engineers has not been passed. The passage of such legislation will probably result in further reorganization in the Construction Division of the Quartermaster General's Office, in the Washington office and in the field.

★

CCC ACTIVITIES

The work of the Civilian Conservation Corps is being greatly curtailed, with the result that many members of the technical planning professions, heretofore engaged in these activities, are seeking employment in other government agencies. It is quite likely that employment of members of the technical planning professions by this agency will continue to decrease until such time as the present emergency develops into a situation where an expanded program of public works requires this agency to again function at its former levels.

★

CIVIL SERVICE TESTS

The Civil Service Commission is now holding an "Open Continuous Examination," for *Estimators* and for *Specification Writers,* because of the shortage of personnel available through the Civil Service Roster for appointment to positions requiring this kind of knowledge. This examination will close on June 30, 1942, and is known as Examination No. U-69. This examination is a non-assembled examination which does not require any examination test other than have the applicant fill out in detail a questionnaire providing information as to his experience and qualifications in either of these specific fields of knowledge. Those who desire to take this examination should inquire at any post office for "Civil Service Form No. 8." For those who pass this examination there seems to be adequate opportunity for immediate employment. Under normal procedure the applicant who takes this examination would receive a rating and be placed upon the "Eligible List" within the period of one week if the examination is successfully passed.

The same kind of an examination as the one now open to architects and engineers in the field of Estimating, and Specification Writing is also open in the fields of "Heating and Ventilating," "Air Conditioning," and "Plumbing." Those architects and engineers who have a specialized knowledge and experience in these kinds of work and who desire employment should apply at an early date to take this examination.

POST WAR PUBLIC WORKS PROJECTS

Increased emphasis is being placed upon the program of preparing for the Public Works Program which will follow this emergency. The Federal Works Agency is taking a leading part in this preparatory work which promises to develop on a much more extensive scale, and on a far better organized basis than has heretofore existed. Much planning is being done by a large number of the active and forward looking Municipal, County, and State Agencies.

AIR CORPS ACTIVITIES

A tremendous expansion in the Army Air Corps is requiring increased personnel in problems of planning and construction of army and municipal air fields throughout the United States. If the present emergency continues, with the increased importance of this branch of the Army, there is a strong possibility that this branch of government activity will require the services of many more members of the technical planning professions than are now employed.

Nov. 18, 1941

(Editor's Note:—A Revised Procedure for Obtaining Coordinator's Designation as Defense Housing Under Regulation W of the Board of Governors of the Federal Reserve System may be had from the office of Charles F. Palmer, Coordinator of Defense Housing, Washington, D. C. Also available from his office is a revised list of Field Representatives of the Division of Defense Housing Coordination, and a Revised Listing of Defense Housing Areas).

DEFENSE HOUSING

Location	*Construction Agency**	*No. of Units*	*Using Agency*
Muscle Shoals, Ala.	TVA	440	Defense Industry
Tuskegee, Ala.	OADH	30 P	Army Air Base
Campo, Calif.	OADH	30 P	Camp Lockett
Compton, Calif.	OADH	400	Defense Industry
Compton, Calif.	OADH	380	Defense Industry
Long Beach, Calif.	OADH	800	Defense Industry
Long Beach, Calif.	OADH	225	Ft. MacArthur
San Francisco, Calif.	OADH	40	Presidio
Wilmington, Calif.	OADH	430	Defense Industry
Wilmington, Calif.	OADH	250	Defense Industry
Bantam, Conn.	OADH	40	Defense Industry
New Haven, Conn.	OADH	300	Defense Industry
Atlanta, Georgia	USHA	180	Navy Aviation Base, Army Hosp.
Rockford, Ill.	USHA	350	Defense Industry
Elkton, Maryland	OADH	500	Defense Industry (includes 200 P)
Pittsfield, Mass.	OADH	100	Defense Industry
Springfield, Mass.	USHA	300	Defense Industry
Buffalo, New York	USHA	200	Defense Industry
Cheektowaga, New York	OAMO	1050	Defense Industry
Lackawanna, New York	USHA	200	Defense Industry
Niagara Falls, New York	USHA	450	Defense Industry
Tonawanda, New York	USHA	1200	Defense Industry
Astoria, Oregon	PBA	100	Naval Air Station
Portland, Oregon	OADH	400	Defense Industry
Bristol, Penna.	PBA	200	Defense Industry
Coatesville, Penna.	OAMO	400	Defense Industry
Jackson-Milan-Humboldt, Tenn.	OADH	200 P	Ordnance Plant
Freeport, Texas	PBA	200	Defense Industry
Orange, Texas	OAMO	900	Naval Const.
Pasadena, Texas	USHA	150	Defense Industry
Texarkana, Texas	USHA	400	Defense Industry
Newport News, Virginia	USHA	350	Defense Industry
Newport News, Virginia	NAVY	12	Mine Warfare School
Quantico, Virginia	OADH	250 P	Marine Base
Keyport, Wash.	OADH	300	Naval Torpedo Station
Seattle, Wash.	OADH	800	Defense Industry
Seattle, Wash.	USHA	250	Defense Industry
Seattle, Wash.	OADH	350	Defense Industry
Seattle, Wash.	OADH	100	Defense Industry
Tacoma, Wash.	PBA	400	Defense Industry
Morgantown, W. Va.	PBA	150	Defense Industry

**OADH—Office of Federal Works Administrator, Division of Defense Housing; OAMO—Office of Federal Works Administrator, Mutual Ownership Defense Housing Division; PBA—Public Buildings Administration; TVA—Tennessee Valley Authority; USHA—United States Housing Authority; NAVY—U. S. Navy.*

PENCIL POINTS DATA SHEETS

Prepared by DON GRAF, B.S., M.Arch.

DISREGARD OF THE OBVIOUS

You will no doubt be excited to learn that the Ninth Annual Convention of the *Institute of Cooking and Heating Appliance Manufacturers* was held at the Netherland Plaza Hotel in Cincinnati, Ohio, on December 3rd, 4th and 5th. In case you are a little hazy about this organization, it should be explained that its purpose is to promote cooperation and understanding between the members of the Cooking and Heating Appliance Manufacturers Industry.

A careful perusal of the program reveals no subjects for discussion which might possibly include the matter of functional design, nor the existence of any committee to "promote cooperation and understanding between stove

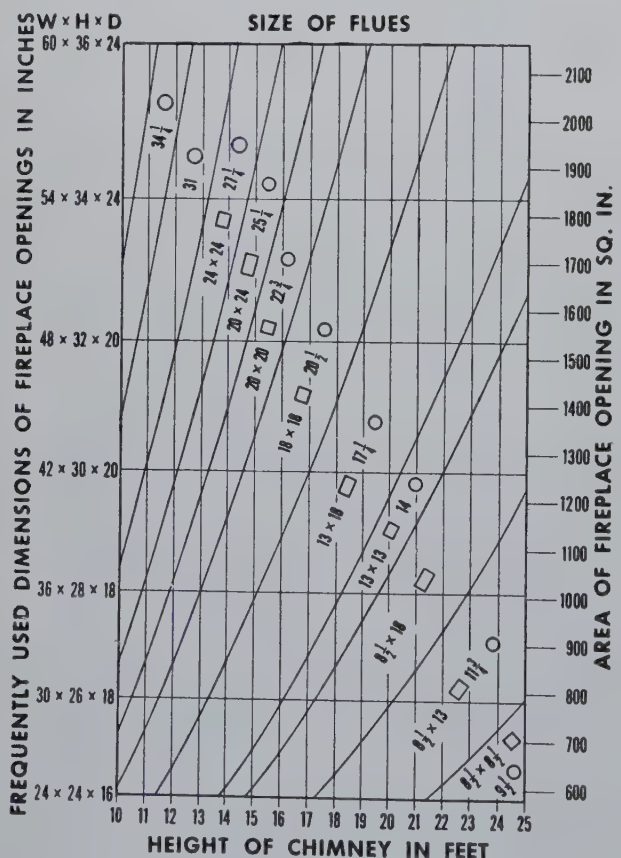
FIREPLACE FLUE SIZES

(*This Sheet Supersedes* E2b)

Index No. **E 2cc** MECHANICAL

PENCIL POINTS DATA SHEETS PREPARED BY DON GRAF

SET 20 DEC 1941



The commonly used rules of thumb for proportioning fireplace flues are very inaccurate methods since the draft of a flue may be said to vary inversely as the square root of the height. If we take a chimney 25'-0" from the top of the fireplace opening to the top of the flue as being satisfactory, on the basis of flue area equal to 1/12th the opening area we can derive the following formula from which the above chart has been plotted:

$$\text{Flue area in sq. ins.} = \frac{.41 \times \text{opening width"} \times \text{opening height"}}{\sqrt{\text{chimney height'}}}$$

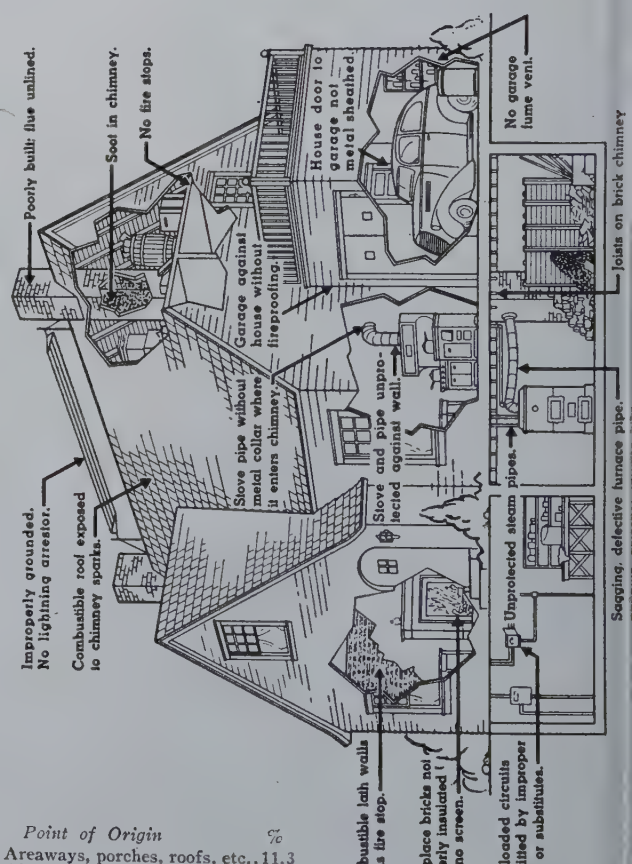
This chart should provide proper flue area for fireplaces having less than usual height.

ORIGIN OF FIRES IN RESIDENCES

Index No. **F17** CONSTRUCTION

PENCIL POINTS DATA SHEETS PREPARED BY DON GRAF

SET 20 DEC 1941


Poorly built flue unlined.
Soot in chimney.
No fire stops.
House door to garage not metal sheathed.
No garage fume vent.
Garage against house without fireproofing.
Joists on brick chimney
Stove pipe without metal collar where it enters chimney.
Stove and pipe unprotected against wall.
Sagging, defective furnace pipe.
Improperly grounded. No lightning arrestor.
Combustible roof exposed to chimney sparks.
Unprotected steam pipes.
Combustible lath walls minus fire stop.
Fire place bricks not properly insulated and no screen.
Overloaded circuits permitted by improper fuses or substitutes.

Point of Origin	%
Areaways, porches, roofs, etc.	11.3
Airshafts	0.2
Attics	1.1
Awnings	2.7
Bathrooms and toilets	0.8
Bedrooms	10.1
Boiler and furnace rooms	2.2
Cellars	16.3
Chimney fires	2.3
Closets	4.2
Defective flues	5.3
Dining rooms	5.5
Dumbwaiter and elevator shafts	0.5
Hallways and corridors	2.5

Point of Origin	%
Kitchens	13.4
Parlors	7.5
Partitions, under floors, etc.	1.1
Storerooms	0.7
Stoves	10.5
Vacant floors	1.4
Miscellaneous	0.4

builders and *architects*," no buffet luncheon in honor of trends toward permanence in kitchen equipment installation, no reports condemning legs and round corners on stove tops.

In October in this corner we complained about the designing of sinks, refrigerators and stoves as if they were temporary additions to the modern kitchen. Our squawk provoked sufficient number of replies to indicate that we are not alone. One reader writes:

"I heartily agree with your statement regarding the appearance of ranges and refrigerators. However, the idea of an integral unit containing a sink, cabinets, range and refrigerator has been developed and marketed." An illustration of the unit referred to is shown in the picture at the left. We take off our hat to the St. Charles Manufacturing Company for the development of a truly functional and beautiful piece of kitchen equipment. The left hand section of the floor cabinet is a refrigerator. In the foreground is a gas range. In the middle is a sink.—The whole thing is tied together with a continuous countertop to make a sanitary, permanent and convenient unit that did not just happen by itself.

The gushy ladies' magazines have printed hundreds of thousands of words and countless illustrations on kitchen design. In addition to the fact that they miss completely any semblance of efficiency in planning, they have never, so far as we know, in their superficial way, pointed out the most glaring obstacle to real kitchen sanitation. We see all kinds of drool about the chintz curtains over the sink, the gay little pepper shaker for the stove, lovely color schemes in shades of red and pale mauve with green accents, topped off with an illustration that looks like a jigsaw puzzle of cabinets, refrigerators, ranges, and sinks that don't go together.

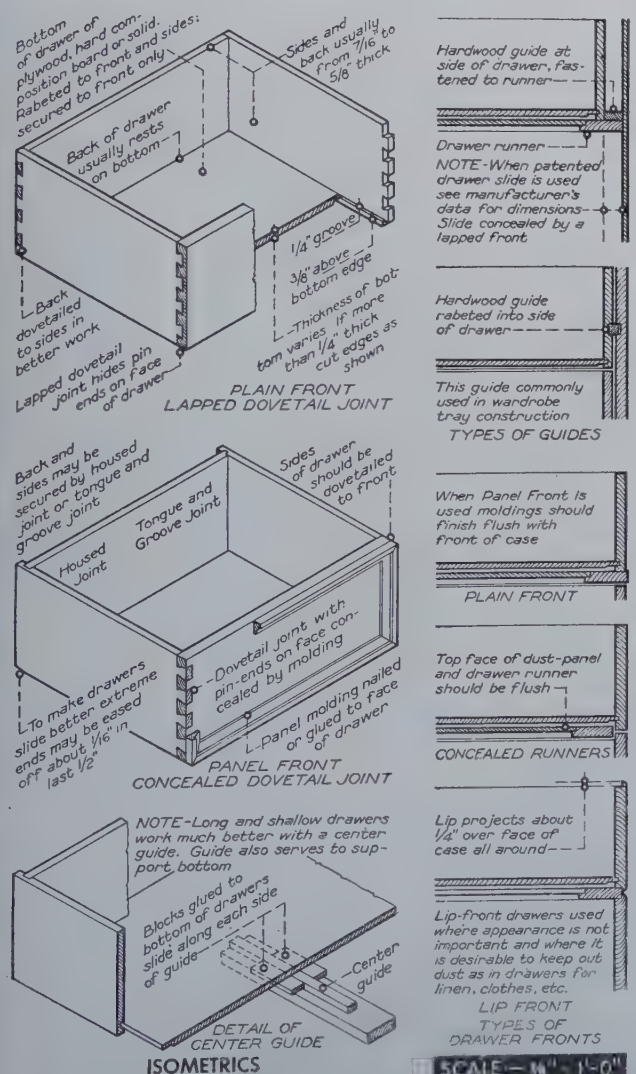
Because of National Defense many items of kitchen equipment are not available. Just for the sake of argument, however, let us assume

CABINET DRAWER DETAILS

Index No. **F 18 c** CONSTRUCTION

PENCIL POINTS DATA SHEETS PREPARED BY DON GRAF

SET 20 DEC 1941


Bottom of drawer of plywood, hard composition board or solid. Rabeted to front and sides; secured to front only
Sides and back usually from 7/16 to 5/8" thick
Back of drawer usually rests on bottom
1/4" groove
3/8" above bottom edge
Back dovetailed to sides in better work
Lapped dovetail joint hides pin ends on face of drawer
Thickness of bot tom varies if more than 1/4" thick cut edges as shown
PLAIN FRONT LAPPED DOVETAIL JOINT
Back and sides may be secured by housed joint or tongue and groove joint
Sides of drawer should be dovetailed to front
Housed Joint
Tongue and Groove Joint
Dovetail joint with pin-ends on face concealed by molding
To make drawers slide better extreme ends may be eased off about 1/16" in last 1/2"
Panel molding nailed or glued to face of drawer
PANEL FRONT CONCEALED DOVETAIL JOINT
NOTE-Long and shallow drawers work much better with a center guide. Guide also serves to support bottom
Blocks glued to bottom of drawers slide along each side of guide
Center guide
DETAIL OF CENTER GUIDE
ISOMETRICS SHOWING DRAWER CONSTRUCTION

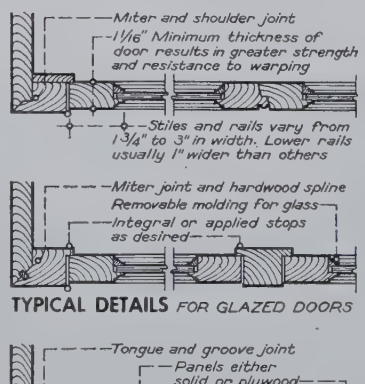
Hardwood guide at side of drawer, fastened to runner
Drawer runner
NOTE-When patented drawer slide is used see manufacturer's data for dimensions-Slide concealed by a lapped front
Hardwood guide rabeted into side of drawer
This guide commonly used in wardrobe tray construction
TYPES OF GUIDES
When Panel Front is used moldings should finish flush with front of case
PLAIN FRONT
Top face of dust-panel and drawer runner should be flush
CONCEALED RUNNERS
Lip projects about 1/4" over face of case all around
Lip-front drawers used where appearance is not important and where it is desirable to keep out dust as in drawers for linen, clothes, etc.
LIP FRONT
TYPES OF DRAWER FRONTS
SCALE — 3" = 1'-0"

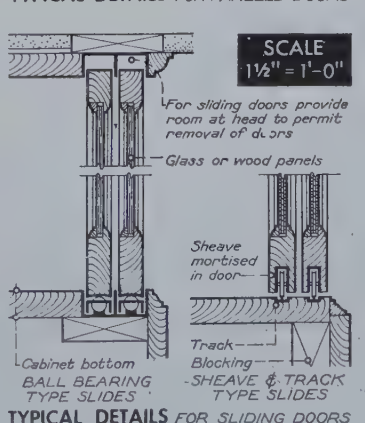
CABINET DOOR DETAILS

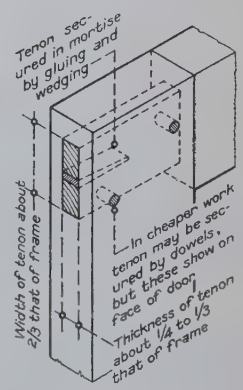
Index No. **F 18 d** CONSTRUCTION

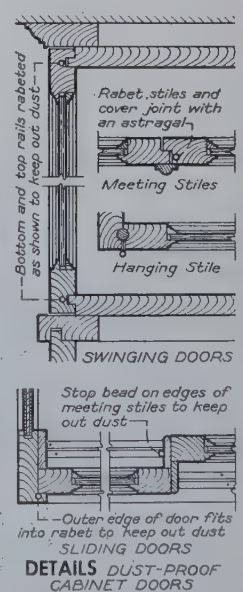
PENCIL POINTS DATA SHEETS PREPARED BY DON GRAF

SET 20 DEC 1941


Miter and shoulder joint
1 1/16" Minimum thickness of door results in greater strength and resistance to warping
Stiles and rails vary from 1 3/4" to 3" in width. Lower rails usually 1" wider than others
Miter joint and hardwood spline
Removable molding for glass
Integral or applied stops as desired
TYPICAL DETAILS FOR GLAZED DOORS
Tongue and groove joint
Panels either solid or plywood
Mullion
Swinging doors should not exceed 2'-0" width. 1'-3" to 1'-6" desirable
Miter joint with miter brads
Meeting stiles of doors usually rabeted and beaded
Flush panel doors
TYPICAL DETAILS FOR PANELED DOORS


SCALE 1 1/2" = 1'-0"
For sliding doors provide room at head to permit removal of doors
Glass or wood panels
Sheave mortised in door
Track
Blocking
Cabinet bottom
BALL BEARING TYPE SLIDES
SHEAVE & TRACK TYPE SLIDES
TYPICAL DETAILS FOR SLIDING DOORS


Tenon secured in mortise by gluing and wedging
Width of tenon about 2/3 that of frame
In cheaper work tenon may be secured by dowels, but these show on face of door
Thickness of tenon about 1/4 to 1/3 that of frame
ISOMETRIC SHOWING MORTISE AND TENON
This joint should be used in constructing cabinet doors


Bottom and top rails rabeted as shown to keep out dust
Rabet, stiles and cover joint with an astragal
Meeting Stiles
Hanging Stile
SWINGING DOORS
Stop bead on edges of meeting stiles to keep out dust
Outer edge of door fits into rabet to keep out dust
SLIDING DOORS
DETAILS DUST-PROOF CABINET DOORS

that everything shown in the catalogs are really obtainable. What does the market afford?

Heading the list is the unit shown on page 782, for kitchens using either gas or electricity.

The second manufacturer makes a unit in which the refrigerator and sink are integral but the gas range is an afterthought.

The third manufacturer makes units in which the sink and electric range are integral but for the ice box you have to buy one of these fat, round cake-icing affairs, and no gas cooking unit is available.

The fourth shows a more or less integral sink but the range and the ice box are of the traditionally movable design.

The fifth manufacturer has one unit with sink and refrigerator covered by a continuous counter-top and the electric range top made "built-in" with the addition of a dirt-collecting cover molding to mark the change in material from linoleum to enameled steel.

The sixth does the same thing with the gas range that the fifth one has done with the electric.

A seventh makes a sink and range unit but no refrigerator.

Now all these manufacturers are makers of cabinets. We have only praise for those companies who make counter-tops—of which a number of excellent types can be purchased. But what good does it do, to be able to buy a proper counter-top when a refrigerator, electric or gas stove cannot be found for installation in the cabinet work as a continuous whole?

Will somebody please get busy and manufacture gas stoves, electric stoves and refrigerators in different capacities for different sizes of kitchens so that they will fit the standard base cabinets 2′-0″ deep and 3′-0″ from the floor to the counter-top? Then and not till then can kitchen design be approached as the delightfully organized and integrated laboratory that the ladies' magazines have simpered about for these many years.

PUBLIC RELATIONS

A FORUM EDITED BY D. KNICKERBACKER BOYD

As the first year of the life of this section draws to a close it seems fitting that those interested in Public Relations activities should be furnished with an index for easy reference to what has appeared in past months. Such an index has been prepared and is available in the form of mimeographed sheets, which will be mailed upon request to anyone who can make use of the information. It was considered best to do this rather than to print it here, since it would have occupied all our space for this month and prevented the inclusion of additional helpful suggestions. The index should be valuable also as a check list of the many activities that can be undertaken either by interested individual architects or by such groups as A.I.A. Chapters, local societies, or State associations through committees.

Public Relations activities are particularly important and feasible at a period like this, when some architects find their practice temporarily curtailed and have time on their hands to take part in making contacts and carrying on public education among local government officials and the citizenry in general.

In thanking all readers and contributors for their valuable cooperation during the past year and in inviting a continuance of their interest for the future, this section extends most cordial best wishes for the Christmas season and for a healthy, happy, and prosperous New Year.

D. KNICKERBACKER BOYD
No. 4 So. 15th St., Philadelphia, Pa.

EXHIBITS & EXHIBITIONS

(7) The present public interest in things that have to do with Defense affords a good opportunity for architectural groups to put themselves in the public eye. A case in point is the exhibit presented by the State Association of California Architects, Northern Section, at the California State Fair in Sacramento last September. This show was developed in collaboration with the O.E.M. and the California State Council of Defense. We quote from the letter of Phil Soljak, Public Relations representative for the Association.

"As the exhibit was the first of its kind in the country and was for only ten days, we had quite a few problems. We solved these by erecting a kind of wood shed or deck in an excavation 30 ft. long, 12 ft. wide, and 3 ft. 6 in. deep, lining it with corrugated steel and covering the whole with earth and sandbags. It looked quite like the real thing, especially when gas masks, tin hats, British civil defense posters, fire and first-aid equipment, etc. were added. We also borrowed sound equipment and gave the crowd a thrill with air raid sound effects.

"I believe we broke the record for an architectural exhibit. A total of 175,000 people, 23% of the total attendance at the Fair, inspected the exhibit during the eight days of its presentation. Federal, State, and Army Air Corps officials were greatly interested and have asked us to repeat the show in other California cities. In case we do this we would utilize more substantial materials such as interlocking brick, following the present trend in British air raid shelter construction."

The accompanying photograph shows the exhibit as it appeared, with Mrs. Soljak standing very smartly at attention in front of it.

UNIFICATION AND P.R.

The following statement by Lewis G. Adams, Chairman of the Committee on Unification of the New York Chapter, A.I.A., has a direct bearing on Public Relations activities. Manifestly, better and closer organization among architects should be an accompaniment, if not indeed a prelude, to more active and effective public education. There are a number of metropolitan communities other than New York which are confronted with a similar situation. The soon-

er the job of pulling the many separate groups together into closely knit organizations is tackled, the better. Says Mr. Adams:—

"The picture found in most communities at present is one of utter confusion as regards the architects' own house. For example, the New York Metropolitan Area, with a total of approximately 2548 registered architects, boasts three distinct AIA Chapters with a total membership of about 516, seven architectural societies with a total membership of about 620, the *Architectural League,* the *Beaux-Arts Institute of Design,* the *Municipal Art Society* and many others allied to architecture.

"To complicate matters more, there are the Registered Architects of the state, numbering about 3535, of which between 60% and 70% *do not belong to any architectural organization.* A questionnaire recently sent to members of this group with addresses in the Metropolitan Area reveals that 70% of the 24% replying would be glad to join a single strong architectural organization in the Metropolitan Area, that an additional 5% might join and only 5% said they were not interested. 5% of the group questioned had retired from practice or gone into other fields and 15% were members of architectural organizations in neighboring states or were erroneously sent questionnaires. However, a large majority of this group said they would join such an organization.

"If there were no existing organizations, what would be the ideal set up so that the architects in a given district could have (1) close association with each other; (2) a well directed public relations program which includes selling the profession to the public; (3) active interest in local, state, and national legislation as it affects architects; (4) an active campaign to put the planning of public buildings in the hands of private architects; (5) periodic bulletins on matters of vital interest to the profession; (6) encouraging and stimulating architectural education; (7) maintenance of the ethics of the profession; and (8) the return of the practice of architecture to architects?

"*First*—all registered architects should be eligible for membership in a single organization in a given locality. *Second*—each group should be connected to a State organization for purposes of showing a united front to the State Legislature, and each State organization should be connected to a National one for purposes of showing a united front to Congress. All members should have equal rights and dues should be based in general on ability to pay. A full time salaried director should be employed for each group and each group should have permanent headquarters. Dues must be low enough so that all architects and draftsmen can join and yet large enough to yield adequate funds.

"The natural nucleus for such an organization is the AIA."

NEWSPAPERS

(4) New York Times Magazine in its edition of Sunday, October 19th, presented a double-page spread featuring views of six houses designed by architects for themselves. The pages are reproduced in miniature at the bottom of this page. The six architects represented were Robert I. Powell, William F. Dominick, Kenneth Kassler, Walter Gropius, William Lescaze, and Frank Lloyd Wright. A statement by each architect telling the whys and wherefores of his design accompanied the picture and the editor in a note called the whole collection to the attention of "All people who are struggling to reconcile their dream houses with their pocketbooks and get the results in the blueprint stage before next spring."

The feature was initiated by the Times editors and reflects their recognition of the perpetual interest of the public in house design. It suggests the possibility that it is not necessary to wait until a newspaper invites material of the sort. An alert Public Relations committee should be in touch with all such opportunities and should initiate ideas for such features.

WHY NOT UNION NOW?

A PROPOSAL FOR THE PLANNING PROFESSIONS

BY ELLIS F. LAWRENCE

William Orr Ludlow, member of Committee on Public Information, A.I.A., in his recent article in *The Octagon*, "Are Architects Slipping?", challenges the profession to action. He quotes, "The profession is held in low esteem by the public. The public has not much use for architects because it thinks they are just fellows who draw pretty pictures." He says, "Many don't see what they can do, especially under war conditions, when the public is little interested in architects because the government is doing most of the building."

But people *are* interested in defense—in wastage of the taxpayers' money—in interference with individual enterprise, and with inadequate foresight in planning the vast program which the government is undertaking. *The profession is doing too little to convince the public and its government of the value of its services in this emergency.* Mr. Ludlow ends his article with—"If we want individually to take our part when there is so much dire need, we have got to make use of every opportunity to gain and to hold the respect and confidence of the public by public service."

The writer here offers a program by which the "Public Information" suggested by Mr. Ludlow as a need, may have a maximum of force and perhaps gain, through united efforts, the privilege of serving the government to the limit of our abilities as a profession of planners, and not "picture makers."

In the same issue of *The Octagon* appears the informative article on "Planning for Civilian Defense" by Harvey Stevenson, President of the New York Chapter, A.I.A. We can, if we will, profit much by the experience of the profession in England which he gives us. As he says, our Government began by imitating the cart-before-the-horse method England adopted until October 1940 when a "proper Ministry of Works and Buildings was finally created and private architects found a field of real service therefrom."

We already have a shortage of trained technicians in certain fields, as England had, and yet the draft boards continue to take our senior students in architecture for the Army, regardless of temperament and training, leading some of us to the conclusion that the draft is not as selective as we had hoped.

We note, also, that "the British government is encouraging and even allowing priorities for desirable private, municipal, and semi-public construction and reconditioning. Most of all it is undertaking long-range planning of the broadest scope. They feel, as we should feel already, that an emergency must not be allowed to breed conditions as bad as or worse than they were before."

Mr. Stevenson ends his article with the following:

"It would be ingenuous in the extreme to assume that *all creative artists* could be molded at once into a united front for their mutual good, but I believe that the trend of the times demands the most intense efforts in that direction. It does not seem to make sense that those who create the machinery for a product should have one set of principles, those who design the plant another, those who try to provide, if anyone does, for the physical needs of the workers a third, and so on. Until such time as it is realized that all those people who use vision and imagination in a creative effort, making better things for human use, can join together to protect and strengthen their crea tive ideals, they will never attain a position commensurate with their efforts."

Here is suggested that collaboration which we must have if the natural emergency is to be solved and post-war days are not to be disastrous. Here is a picture of the planners—"joining together to protect and strengthen their creative ideals"—for the cause of humanity.

But Mr. Stevenson calls the planners "creative artists"! For popular consumption, perhaps it might have better been "creative engineers." One local OPM director has warned that beauty can expect no place in priorities these days and more than one critic has stated that the great architecture of the day is done by engineers.

The writer, in the past, has pleaded for the creative approach. To him architecture is engineering plus beauty. But he has lived long enough to know the architect, as such, has no monopoly on beauty or the comprehensive art and science of planning. He knows engineers, social workers, home economists – yes – and bankers that are planners and good planners,

as well as the architects and landscapers. If we are not cultists, we must admit that good site planners, good housing experts, good city planners may come from training and experience in any of the above fields. We should, by this time, know architecture itself is a collaborative social function in which the architect can well be the coordinator and designer.

Therefore, is it not time to bring the planners of the country together in the common undertaking, knowing that "In Union There Is Strength?"

The engineer does, just now, have more popular appeal than does the architect and his opportunities are relatively greater. However, one branch of the government, for reasons best known to itself, uses the Architect-Engineer private practitioners to do much of its work. Is it not significant, this new use of the term Architect-Engineer? Perhaps it might be well to capitalize on this and to consider how, if the strength of the planners were enough, it might be sold to all other governmental agencies to use the Architect-Engineer. To qualify, the practitioner would have to organize a group of associates including experts in the lines in which he did not quality—but why not? We know no man can master all phases of the planning problem.

Perhaps there are landscape architects, or housing experts, or city planners who would deny they were architects or engineers—were in fact a new breed of planners—but if such there be, they are few in number. Even to these it should be apparent that they are too weak to push off the stage those other planners —the engineers and architects.

The first step at this time, it appears to the writer, is for all planners to form an alliance, strong enough in finance and numbers to make their message heard by the public, industry, and especially by government, in both the executive and legislative branches.

As Mr. Stevenson writes in his *Octagon* article: "In summary, then, policies must be planned, projects must be planned, and the work must be planned, all with the full utilization and advantages of *all technical skills available.*"

The writer suggests, therefore, that a Federation of all planning groups be formed from which a National Council of Planners would be chosen to direct a campaign of publicity and education to sell the idea that industry, cities, housing, and governmental defense projects must be planned to avoid waste and to be efficient; and that we, the planners of the country, know and can prove the values to be offered by us in this national emergency. The big idea of planning must be the dominant note. The rivalries between the professions are hurting the cause.

What would the engineers think of such an approach? The writer believes from his experience that they would be friendly to it. The attitude of many engineers is shown in their attacks on the narrowness of their education. Professor Baldwin Woods of the University of California (Mechanical Engineer) writes in the August number of *Architect and Engineer,* "It is not mentioned often enough that engineering is first an art, and second a science." And, "There is often a hiatus between design and production because the designer doesn't know how the production man must make a thing. There should be a combination of emphasis on power of analysis and ability to do."

In the same magazine is an article on "Engineer Needs Greater Vision." Professor William S. Lynch, Head of the Department of Humanities, warned against entrusting power to men who, though technically skilled, are lacking in vision. He pleads for the humanities in engineering education, and warns that more and more the engineer will be called upon to operate the social controls, as well as machines. He says, "Industry had balked at the personnel material trained in the applied sciences."

In the article, Dr. Edwin S. Burdell, director of Cooper Union, is also quoted along much the same lines.

This shows at least a trend in the thinking of the engineers—the strongest unit among the planners of the country. Engineers, like the architects, are humbled these days. In few cases can either have the freedom necessary to deliver their maximum skill or serve as their knowledge and wisdom permits.

Already the national associations of Engineers and Architects and Landscapers have established friendly relations through conferences and association with governmental agencies. It seems reasonable, then, that this suggestion to form a more formal Alliance of Planners, might succeed in time to contribute much to society in the emergency and guide future destinies in the post-war period.

The writer suggests, therefore, that the American Institute of Architects take the initiative and invite the planning groups for a conference, to perfect plans for a "Union Now" of the planners of the country, where a National Council of Planners might represent strength sufficient to properly advance the cause of Planning in defense and post-war problems. This is no surrender of the prerogatives of any group involved. It strengthens every one of them for there is a place and a need for all.

Summarized Program

1. A Combined National Convention of Planning Groups, Architects—Engineers—Landscape Architects—City Planners—Housing Experts, to promulgate plans for a Federation of National Planning Societies represented by a National Council of Planners, and to consider mutual problems involving education, and general practice, but especially defense and government service.
2. Local meetings and conferences of the above groups in educational institutions and in local fields of practice.
3. Reciprocity between Registration Boards, that the use of the terms Architect-Engineer and Engineer-Architect may be legalized
   a. By engineering examinations for architects to meet standards acceptable to Engineering Registration Boards, and
   b. By examinations in planning and practice for engineers, to meet standards acceptable to Architectural Registration Boards.

RESUME OF AIR CONDITIONING

BY RONALD ALLWORK

To many in the building field, air conditioning is still a vague insinuation of a new era of living—a new discovery which bids fair to change the whole concept of architectural design. Actually, however, it is merely the coordination of certain objectives that have long been familiar, and though its use for human health and comfort is comparatively recent, to industrial engineers it is just another name for something they have applied to manufacturing processes for many years.

Unfortunately, when the term air conditioning first came into popular usage, it was applied rather loosely, and very often implied more than it could accomplish. Manufacturers' associations, realizing the ultimate effects of possible misconceptions, adopted regulations governing its use. Also the Federal Trade Commission found certain instances of misuse and took appropriate steps. Nevertheless the misunderstanding that developed in the first few years from claims and counter claims still contributes to such confusion as exists today.

In its broadest sense, air conditioning implies a control of any or all of the physical and chemical qualities of the air within a defined space. That this admits of almost unlimited possibilities is soon appreciated when it is realized that the scope of air conditioning application covers the industrial as well as the human comfort field. But to the layman and to the man in the building field who is so close to the layman's problems, air conditioning is more than often thought of in terms of human health and comfort. For this reason it should be defined more specifically as having four objectives, which involve the control of: (1) temperature, (2) humidity, (3) cleanliness, and (4) air movement within an enclosed space to produce a desired effect upon occupants or materials.

It is the purpose of this article to analyze these objectives and provide the reader with a procedure for appraising an air conditioning system rather than for its design. The discussion which follows is at best but a broad introduction to a complicated and scientific subject. Discarded theories, such as the one involving the effects of carbon dioxide, are omitted from mention, as are those new elements like ionization, which are not yet proven in application. Finally the reader will do well to remember that while the advances in the field of air conditioning have been great, the reproduction of an atmospheric condition as stimulating, healthful and comfortable as nature's ideal weather has not yet been achieved.

PHYSICAL PROPERTIES OF AIR

Because "air" *is* essentially the subject of this discussion it might be well to examine it briefly and to establish its characteristics. Ancient scientists called air an element—but today it is more properly known as a mixture of gases. More specifically it is made up of nitrogen, oxygen, argon, carbon dioxide and small amounts of hydrogen and other gases. Atmospheric air also contains water vapor, and while the proportion of the gases remain fairly constant, the amount of water vapor *does* vary. Because this variation is considerable, it plays an important role in air conditioning design.

TEMPERATURE AND HUMIDITY

Even the briefest reference to that trite phrase, "It's not the heat—it's the humidity" will serve to impress the reader that these two elements go hand in hand.

Heat, when considered from the standpoint of quantity, is known technically as specific heat. In terms of intensity, however, it is temperature—the subject of immediate interest.

When people talk about the temperature they are usually referring to *dry bulb temperature,* which is that measure of heat indicated by the common variety of thermometer. It is the kind of heat that is perceptible to the sense of touch and for that reason is called sensible heat. It is a heat which actually raises the temperature of the body that absorbs it.

But another kind of temperature is *wet bulb temperature.* This is the lowest temperature a water wetted body will attain when exposed to an air current and it is used as an indication of the percentage of moisture in the air. This temperature may be measured by means of a sling psychrometer—an ordinary thermometer whose mercury bulb is covered with a moistened mesh wick. Whirling this by means of a chain or a cord attached to one end causes the moisture to evaporate rapidly and the temperature to fall—the lowest reading attained being an indication of the wet bulb temperature. To better understand what has happened, consider for a moment what takes place in the making of steam, which involves the same phenomena. When water is raised to the boiling point (212°F), steam is produced only when sufficient additional heat is supplied to convert the water into vapor. The temperature of the water is not raised in the process, nor is the temperature of the vapor, the sensible heat having been converted into latent heat—a heat whose character is such that it consumes or spends heat without producing temperature.

In evaporating water below the boiling point, latent heat is also required, and in the case of the wet bulb thermometer it takes this heat from the remaining water. How much heat it takes depends on the dryness of the air and its temperature. Wet bulb temperature thus becomes the temperature at which the air would normally become saturated and is for all practical purposes a measure of the heat value of the air and, indirectly, an indication of humidity.

Humidity, although variable, does have certain limits. At a given temperature, atmospheric air is capable of holding water vapor in varying amounts up to a certain limit, called the saturation point, beyond which a precipitation of the moisture will take place.

Relative humidity is the amount of water vapor in a body of air at a given temperature expressed as a percentage of the total amount of moisture the air is capable of holding. Thus the saturation point represents a relative humidity of 100%. As the temperature rises, its capacity for holding water will increase; as the temperature falls, its capacity decreases. In other words, the temperature of saturated air can be raised to obtain any desired relative humidity, without changing the amount of water vapor content. Conversely, the temperature of warm air can be lowered to a point where saturation will eventually be reached. The temperature at which saturation occurs for a given moisture content is called the *dew point*—a lower temperature resulting in condensation.

AIR CLEANLINESS

Pure air, except as a product of the laboratory, does not exist and every cubic foot about the earth contains impurities of one sort or another. Particles of animal and vegetable matter, of earth, sand, ash, wood, metal and pollen pollute the air. Some of the particles, if they have come from larger pieces of material through breakage or by grinding off, or through disintegration, are known as dust. Other particles exist as fumes caused by condensation, or as smoke, which is made up of carbon particles resulting from incomplete combustion.

Not all of these impurities are objectionable—in fact without dust in some form life would cease. For instance, each rain drop is formed around a dust particle and it is dust that tempers the heat of the sun to make life possible. Yet many of the dust particles found in the air are a definite menace to health, and are a cause of suffering, disease and death.

Impurities in the air are measured in terms of the micron—a unit equal to approximately 1/25000 of an inch. A particle 50 microns in diameter is about the smallest particle that is visible to the unaided eye. Particles as large as this, unless sustained by violent air motion, quickly settle out. Those less than 10 microns in diameter usually remain in suspension, unless removed by artificial methods, and since common bacteria come within this classification, it is evident that air pollution becomes an important problem.

The measurement of the quantity or density of these particles in a given body of air may be accomplished in several ways. One method is to impinge the air on a viscous coated surface, and weigh the particles thus collected. Another brings about the collection of particles by electric precipitation. Microscopic count of the particles collected by impingement in water is commonly used—as is the method of collecting samples in a porous crucible whose weight increase provides the analysis of content.

AIR MOVEMENT

Upon air movement depend such phenomena as evaporation and convection, and it is this function which brings about uniformity of temperature, humidity, and cleanliness. In the form of ventilation it becomes the process by which air is supplied or removed, and though it does not imply air quality, it is the action by which quality is accomplished.

Air movement may be induced by natural forces, commonly called gravity, or by mechanical means, such as a fan or blower. Gravity action depends upon a temperature differential and upon the presence of a localized source of heat or cold. Since air is a mixture of gases which expand with a temperature rise, warm air is forced upward by the weight of the cooler air which seeks to displace it. However, in a confined space, if a local source of heat (or cold) such as a radiator is not in evidence, the air will stratify—the warmest layers being at the top and the coldest being near the floor. This is an important consideration in air conditioning design.

There are a number of instruments currently used for the measurement of air movement. The Pitot tube is used to determine the velocity pressure in confined spaces, such as ducts. The Katathermometer is used principally in free spaces to detect drafts, air currents, and stagnant areas. Anemometers, of which there are several types, also measure the velocity of moving air. "Air changes," a term in common use, refers to the complete renewal of the volume of air within an enclosed space during a stated period of time.

THE REQUIREMENTS

Air conditioning may be divided into two general classifications: COMFORT AIR CONDITIONING and INDUSTRIAL AIR CONDITIONING. The latter, because it is used in connection with substances of established reactions and regulated quantities, does not offer so complex a problem as the former which deals with human beings because the loads on equipment remain fairly constant. Furthermore, such factors as noise, space limitations, etc. are relatively unimportant. Comfort conditioning, on the other hand, is complicated from every angle. Involving the psychological as well as the physiological reaction of humans, it becomes immediately difficult. Not only is it hard to find two people who agree on what kind of air makes them feel comfortable (because health, age, sex, and habits are all factors which affect the reactions) but in addition to this, due to its use in public places, air conditioning for comfort must be designed for a fluctuating load. It must recognize sound as a factor and provide for its control. Finally, it usually

becomes necessary to house bulky equipment and distributing systems in a structure where space is expensive, where appearance is paramount.

INDUSTRIAL CONDITIONING

Although industrial air conditioning is comparatively simple in application, the determination of its requirements is an involved study, almost unlimited in scope. Figure 1. tabulate some of the requirements of the various manufacturing processes. It must be remembered that these at best are but an indication of a need—that a thorough understanding of the problem of the manufacturing process involved is of utmost importance to the proper application of air conditioning.

All the elements of air conditioning may not be needed for a manufacturing process, but usually—in varying degrees—temperature and humidity play the leading roles. Generally a relative humidity of 40% is considered dry, above 80% damp. When dry, materials are more brittle and there is a prevalence of static electricity. When damp, they are soft and pliable. Some materials are processed under humid conditions in order that they may retain their moisture—bread baking is one of these. Others, such as electrical insulation, are processed under the dryest conditions practical. Finally the optimum conditions for a particular manufacturing process may be so extreme as to prove detrimental to the health or efficiency of the workers connected with it. In such an instance, considerations of health come first, while production efficiency and product processing are a matter to compromise.

FIGURE I

TABLE OF USUAL AIR CONDITIONING CHARACTERISTICS FOR VARIOUS TYPES OF BUILDINGS

	TYPICAL INSTALLATIONS	AUTOMATIC CONTROL of TEMP.	AUTOMATIC CONTROL of HUMIDITY	AUTOMATIC CONTROL of VENTIL'N	ELIMINATION of ODORS	CLEAN INCOMING AIR	QUIET OPERATION	FREE MOISTURE PERMIT'D	Customary TEMP. F.	Customary REL. HUMID.
FOOD INDUSTRIES	BAKERY— Dough Fermentation Proofing Bread Cooling	Important Important Essential	Important Important Important	Important Important Important	Immaterial Immaterial Immaterial	Essential Essential Essential	Immaterial Immaterial Immaterial	Yes Yes Yes	80° 90-95 70	80% 80-90 65-70
	PREPARED CEREALS—Packaging, Sealing	Important	Important	Desired	Desired	Essential	Immaterial	Rarely	75	40-45
	CONFECTIONS—Coating, Dipping, Hard Candy Cooling, Packing, Starch Room	Important	Important	Desired	Desired	Essential	Desired	No	60-80	40-55
	DAIRY PRODUCTS—Cheese Butter, But. Chill Room	Essential	Desired	Helpful	Desired	Essential	Immaterial	In cases	40-60	60
	MACARONI PRODUCTS	Essential	Important	Helpful	Immaterial	Essential	Immaterial	Not customary		
TEXTILE PROCESSING	COTTON—Card, Comb, Roving, Spin, Twist, Spool, Warp, Weave, Cloth Room	Helpful	Essential	Aids humidifying & evap. cooling	Immaterial	Not often a factor	Immaterial	Yes	75-85	50-80
	WOOLEN & WORSTED—Card, Comb, Spin, Weave	Helpful	Important	Aids humidifying & evap. cooling	Immaterial	Not often a factor	Immaterial	Yes	75-80	50-70
	SILK—Spin, Throw, Weave	Helpful	Essential	Aids humidifying & evap. cooling	Immaterial	Desired	Immaterial	In cases	75-85	55-65
	RAYON—Filament Mfr., Winding, Weaving	Essential Helpful	Essential Essential	Helpful Helpful	In cases Immaterial	Essential Desired	Immaterial Immaterial	No In cases	70-80	40-60
	FULL-FASHIONED HOSE	Essential	Essential	Helpful	Immaterial	Essential	Immaterial	Rarely	75-80	55-65
GENERAL INDUSTRIAL	TOBACCO—Softening, Stem, Strip, Cigar and Cigarette Making	Important	Essential	Important	Desired	Important	Immaterial	Rarely	70-85	50-85
	RUBBER—Dip, Surgicals Spreading	Important Immaterial	Important	Important Desirable	Desired Desired	Essential Immaterial	Immaterial Immaterial	No Yes	75-80 75-80	25-30 50-55
	PRINTING & LITHOG.	Helpful	Essential	Helpful	In cases	In cases	Immaterial	In cases	70-80	45-55
	PAPER PRODUCTS	Helpful	Important	In cases	In cases	In cases	Immaterial	In cases	70-80	50-60
	CONDITION'G for REGAIN	Important	Essential	In cases	Immaterial	In cases	Immaterial	Rarely	As desired	
	TESTING LABORATORY (Hygroscopic Materials)	Important	Essential	In cases	Immaterial	In cases	Desired	In cases	As desired	
	STORAGE—Tobacco, Paper Wood Products, Textiles	Important	Important	In cases	Immaterial	In cases	Immaterial	In cases	As desired	
	COLD STORAGE—Perishable Foods, Furs	Essential	Important	Immaterial	Immaterial	Important	Immaterial	In cases	As desired	
NON-INDUSTRIAL	AUDITORIUMS ART GALLERIES	Desired Important	Desired Important	Essential Desired	Important Immaterial	Desired Essential	Essential Essential	Small spraying units have been found satisfactory for winter humidifying in many cases	68 68	45 50
	BANKS BEAUTY PARLORS	Desired Helpful	Desired Desired	Desired Desired	Optional Optional	Helpful Helpful	Desired Desired		70 72	45 40
	BUSINESSS OFFICES BROADCASTING STUDIOS	Helpful Essential	Desired Desired	Desired Important	Optional Important	Helpful Desired	Desired Essential		70 70	40 45
	DANCE HALLS DEPARTMENT STORES	Desired Desired	Desired Important	Important Important	Important Important	Desired Helpful	Desired Immaterial		65 70	40 40
	HOMES RESTAURANTS	Desired Important	Desired Important	Immaterial Important	In cases Essential	Helpful Essential	Essential Immaterial		72 70	40 40

AIR CONDITIONING FOR COMFORT AND HEALTH

The human body is remarkable in its ability to adapt itself to a wide range of air conditions. Undoubtedly the reader will recall in his own experiences instances where he exposed himself to extreme weather conditions with comparatively little discomfort and no apparent ill effects on health. Such a subjection, however, actually put severe strain on the body temperature regulating system, and although it may have met the emergency, it was probably accomplished only at the expense of the other organic functions. Over a period of time the human organism will make a measure of adjustment that will ease such a shock, so to speak, but by and large the Eskimo in Alaska and the Fiji on his island both tend to require the same conditions for comfort. Within limits, of course, the human body will adapt itself to environment. A southerner visiting a northern state will shiver in weather that the New Englander finds invigorating and a person living in a cool climate will suffer in the moist heat of the tropics—until acclimatization takes place.

It is evident that to define a universally comfortable air condition is not easy. Individuals, even though used to the same climate, vary in their requirements. Sex makes a difference—because a woman better adapts herself to cold and heat. Physical activity accounts for a wide range of comfort requirements, from the man at rest who needs a blanket, to the worker who labors in his shirt sleeves. Older people usually need more warmth than the younger people do and the man who is robust and healthy is usually uncomfortable in the same air the sickly man needs. Even the season must be taken into account and it is not unusual that a hot day in May is unbearable while the same conditions, repeated in September, make the day seem pleasant.

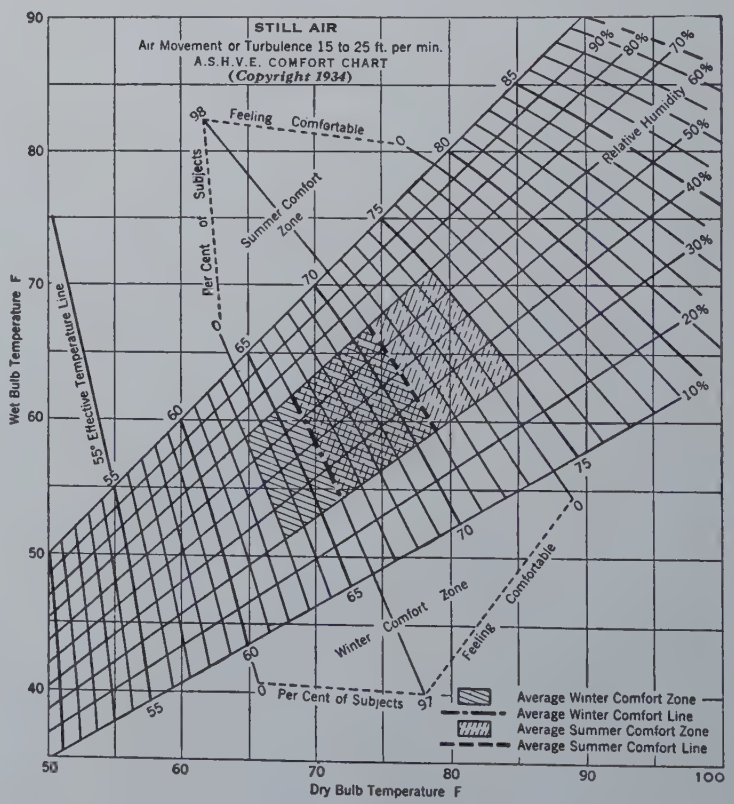
The human organism strives to maintain a constant body temperature of about 98.6°F. The combustion of food within the body (metabolism) produces this heat, but because it is usually well above the temperature of the surrounding atmosphere, there is a constant heat loss through radiation, conduction, and evaporation of moisture. In order to maintain its normal temperature, therefore, the body must effect a fine balance between its rate of heat production and its rate of heat loss.

But the control of temperature alone, as measured by the usual thermometer, does not establish a comfort level. Other elements—humidity, air motion, and radiation make definite contribution. When the air is dry but the temperature is high, the body feels much cooler than when subjected to a lower temperature air which contains a higher percentage of moisture. Air in motion also gives a cooling effect, and radiation, warm or cold, produces a decided sensation. Air, free from objectionable odors, fumes and dust is important to health and comfort.

EFFECTIVE TEMPERATURE

The American Society of Heating and Ventilating Engineers, in a series of tests, established combinations of temperature, humidity and air movement which induce the same feeling of warmth. This they called an "Effective Temperature Index." (Figure below) Hardly an indication of temperature, it is rather a composite index of the elements mentioned above which was computed by experimenting with trained subjects, who, on being subjected to known conditions, stated their reactions. The thoroughness with which this test was carried out makes the result an important contribution to the science of air conditioning.

In using the chart, note that it applies to inhabitants of U. S. only. Also, application of the winter comfort line is intended for rooms heated by central station system of the convection type—not to radiant methods. The summer comfort line is for homes, offices and similar spaces where occupants can become adapted to artificial air conditions but not to theaters, stores, or restaurants, or similar types of public places where persons are exposed for less than three hours, or where exposure is of short duration.



A.S.H.V.E. Comfort Chart for Air Velocities of 15 to 25 fpm (Still Air)

(Reprinted by permission, from A.S.H.V.E. TRANSACTIONS, Vol. 38, 1932, Page 410)

FUNCTIONS OF AIR CONDITIONING

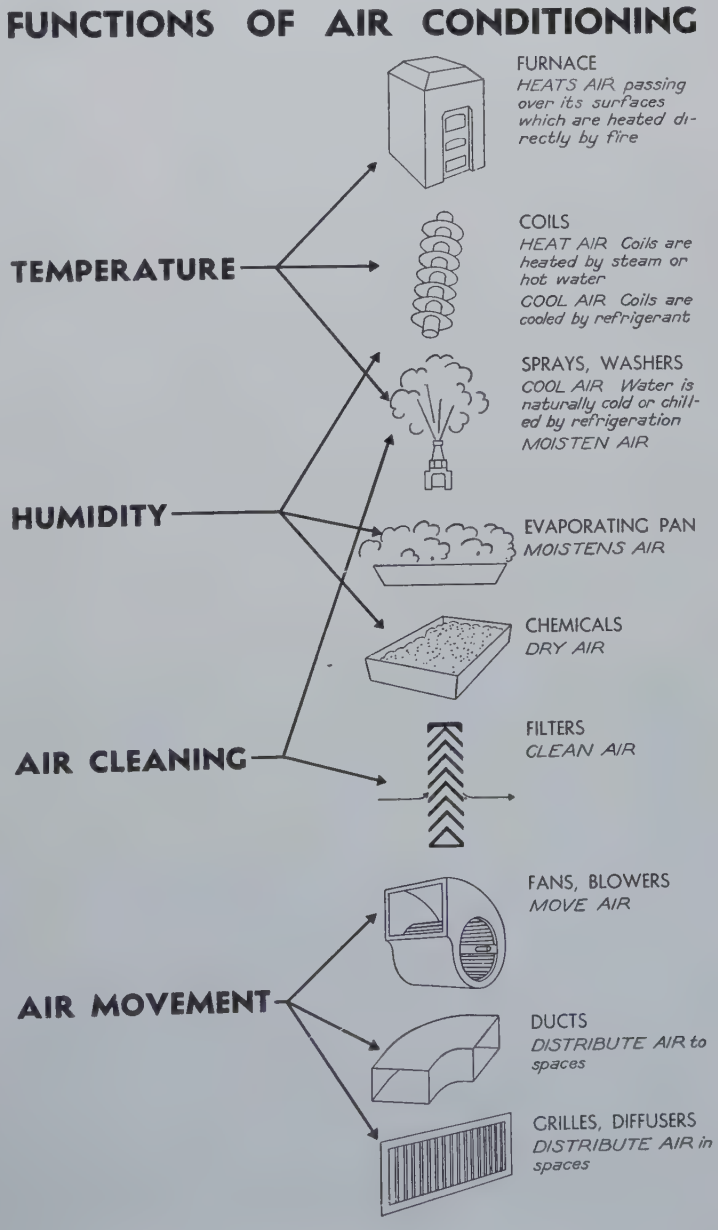
Having reviewed the physical characteristics of air and analyzed the air conditions best suited in industrial and human activity, it remains to describe the various methods by which desired air qualities may be produced. The chart below suggests equipment which will provide the various functions of air conditioning. Even the briefest study of this chart will serve to show the great variety of combinations possible. Add to this the variations in form each particular type of equipment might take and the problem of presenting a clear picture of air conditioning design will be appreciated.

Methods of air conditioning are roughly divided into two classifications, namely (a) duct distribution system and (b) unit conditioning. The duct distributing systems are those which produce conditioned air at a central source and distribute it, by means of ducts, to the several spaces involved. Unit conditioners are self contained units housing the necessary equipment to produce conditioned air within a single cabinet and are usually installed directly in the room involved. Variations and even combinations of both these classifications frequently occur. Types range from systems or units which provide but one of the elements of air conditioning to those which produce complete air conditioning. Thus the common radiator system is, in a sense, an air conditioning system. On the other hand, unit conditioners might fall into the classification of the duct distributing system if short lengths of ducts are used to convey the air to an adjacent room. It would be well, therefore, if the reader would bear in mind that there are no hard and fast rules in the classifications of air conditioning systems.

Although the various functions of air conditioning are produced by the equipment indicated below the performance of this equipment depends on secondary apparatus — sources of heat and cold, sources of energy and power. Heat, in the form of steam or hot water is provided by boilers, or by a furnace which produces hot air. Cold is a product of mechanical refrigeration which includes (1) a compressor to raise the pressure of the refrigerant, (2) a condenser to cool and liquify it and (3) an evaporator in which the refrigerant boils as a result of absorbing heat from its surroundings. Cold is also produced by ice, either by blowing the air directly over it or by using it to chill water which then circulates through a coil or spray that cools the air in turn. Sources of power and energy come from motors, steam engines, steam turbines and internal combustion motors, but electric motors are most commonly used.

Next, the distribution of heat and cold, power and energy, as well as conditioned air must be provided for. Ducts to distribute air have already been mentioned, so add to this piping for steam, hot water, cold water, and refrigerants, plus wiring for electrical energy—and the story is almost complete.

Finally, the various operations must be tied together and the whole system coordinated by means of controls that will assure the maintenance of a desired quality and quantity of conditioned air. How these various functions are provided, how they are controlled—and coordinated, is the subject of the remaining pages.



TEMPERATURE

HEATING—The two methods of providing warmth in a room are known as radiant heating and convection heating. Radiant heating, accomplished by the transmission of heat through space by what is termed "wave motion," does not heat the air in passing through, but *does* heat any object in its path. Convection heating is achieved by the circulation of air which has been warmed by coming in direct contact with a hot surface.

While radiant heating (often called "panel heating") is becoming more important as a result of continuous research and developments, it is not as yet generally used in conjunction with air conditioning systems, hence these paragraphs will deal principally with heating by the convection method.

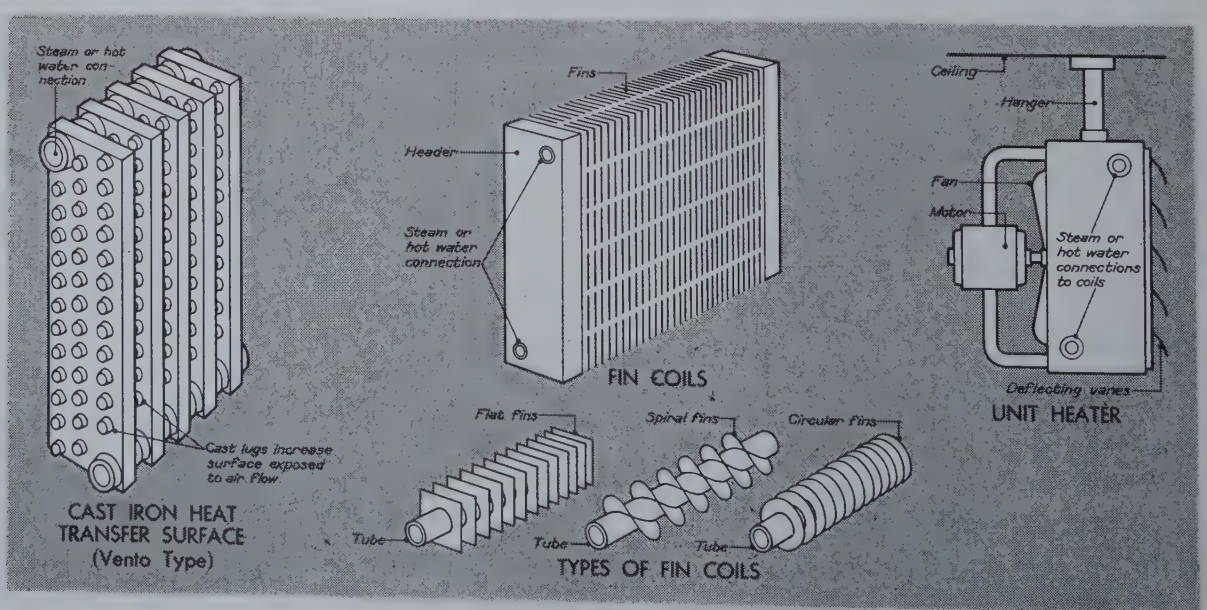
Two types of systems, whose operation depends on convection heating, are in common use. One is the radiator system, the other is the warm air system. The radiator system does offer a certain amount of radiant heating, but the real heating burden is placed on convection. In this system either steam or hot water is used as the medium, and both types enjoy a universal popularity. Steam radiator systems are generally considered the practical solution to the heating of large public and commercial buildings and types have been developed which provide a temperature control unequalled for response and accuracy. A description of these various radiator systems can hardly be presented here but it is enough to say that although they do not provide for the other functions of air conditioning, methods of supplying these functions in conjunction with radiator heating have been achieved and are in every sense practical, if not in some instances preferable.

The warm air heating system may be of the "gravity" or "mechanical" type. The gravity type depends on the natural movement of air through the furnace, and constitutes an extremely inexpensive installation. However, it has many disadvantages which confine its use to the most modest structures. A mechanical warm air system employs a fan to distribute heated air to the various rooms via a system of ducts, and is the logical choice if summer cooling is also to be provided, since the ducts, when properly designed, may be used for both heating and cooling operations. These systems fall into two general classes: (a) furnace systems and (b) central systems.

In the furnace system, the air is heated by passing it directly over the heating surface of the furnace. In the central system, the air is heated in passing through heating coils or cast iron heater sections which have been heated with steam or hot water from a boiler. The coils for heating are usually made up of finned tubes—tubes on which fins of sheet metal have been soldered or are otherwise held. It is their purpose to present as large an area of heated surface to the passing air stream as possible. Cast iron heater sections with cast-on projections are similar in purpose. Both are designed to offer as little resistance to air flow as is practical. Velocities of the air passing through these coils range from 200 to 1500 fpm.

The mechanical warm air furnace system is particularly adapted to residences, small office buildings, school and commercial buildings. Although its application to larger buildings is entirely practical, the central system is used more extensively. The choice of the latter makes it practical to install heating coils in almost any strategic position in the building to provide controlled or zone heating. Such a system also makes it possible to take care of duct connections, but are installed within the special locations where radiators are better adapted, such as vestibules, or for the operation of unit heaters in large spaces.

Unit heaters provide another method of heating that is growing in popularity. Essentially a heating coil and fan (or blower) assembled in one cabinet, these units generally have no duct connections but are installed within the space to be heated. The heating coil is similar to that used in central systems and is heated by means of steam or hot water. Unit heaters are also available with heat transfer surfaces which utilize gas or electricity.



TEMPERATURE

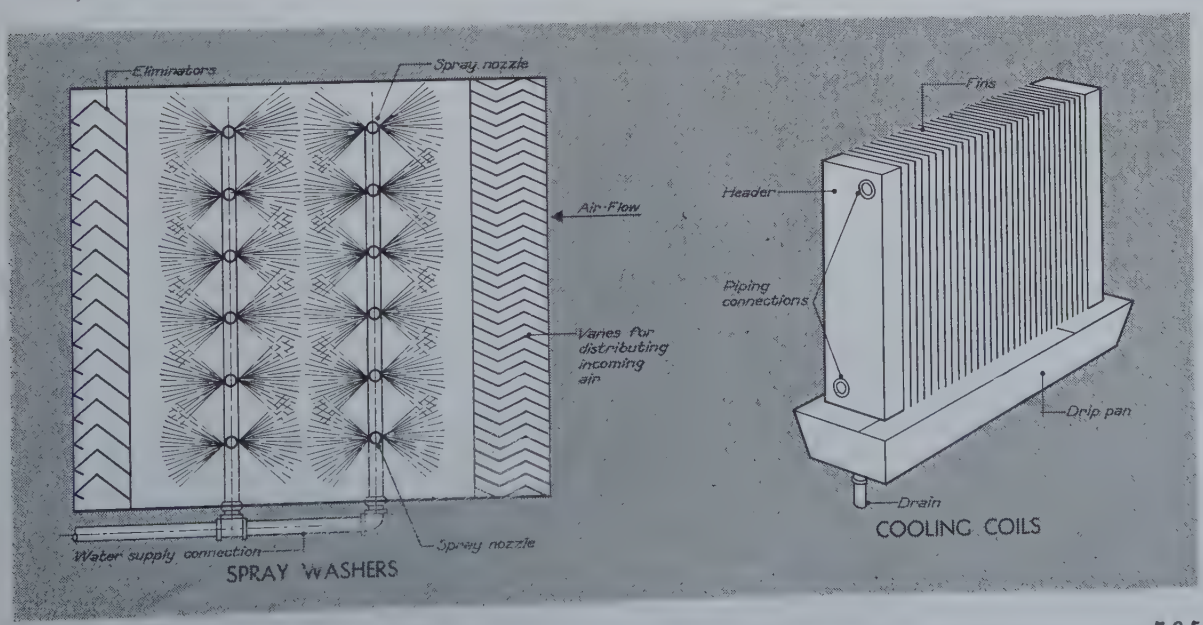
COOLING, DEHUMIDIFICATION—

Because cooling and dehumidification are so closely related, it is difficult not to discuss one without referring to the other. Actually, of course, each could be accomplished separately, but from the standpoint of comfort conditioning the effect would hardly prove satisfactory. Ignore the moisture content but cool the air and the result is a clammy atmosphere; dehumidify without cooling and the air becomes dry and hot. To appreciate this relation, it must be recalled that when air is cooled to a temperature below the dew point it loses moisture, and that the temperature of the air rises when moisture is removed by absorption or adsorption. The difference in the two latter processes is that absorption is that action which sucks up water and causes it to lose its identity, while adsorption is the adhesion of the liquid, in a thin layer, to the solid with which it is in contact.

The cooling of air is provided for in the following two ways: (1) by *surface cooling,* which is the passing of the air stream over a cold surface, or (2) by *spray cooling,* which is the passing of the air through cold liquid sprays. In the first method, the cooling surfaces are usually finned coils similar to those used for heating, except that the fins are spaced further apart to assure proper drainage of the moisture as it condenses on the surfaces. Baffles, called eliminators, are provided at the outlet side of the coils to prevent any entrained moisture from escaping with the air as it passes through. Spray cooling is essentially a tank in which banks of spray nozzles have been placed so as to spray chilled water into the air stream passing through. Here again eliminator plates are provided at the outlet side of the tank to prevent the air from carrying off any entrained moisture.

In both surface cooling and spray cooling, the surface or spray must be cold enough to remove heat effectively. This may be accomplished by the use of refrigerants such as carbon dioxide, Freon, methyl chloride or ammonia. Ammonia is not often used for comfort air conditioning but is employed largely on industrial installations where leaks are not too serious. Cold water, either from a natural source such as a well, or chilled by ice is also used. In chilling the finned surfaces the refrigerant or cold water is circulated through the coils which have been designed to meet the pressure requirements and corrosive action of the particular refrigerant used. In chilling water for the air washer the water may be cooled by actual contact with the ice or by a process involving one of the refrigerants mentioned above.

Dehumidification will take place when the air is chilled to a temperature below the dew point, thereby causing condensation and resultant loss of moisture by the air. This is what takes place when the air passes over cooling surfaces, and all cooling coils are provided with drip pans and a means of draining off water. Spray coolers, paradoxically, will also lower the moisture content of the air by bringing about saturation at such a low temperature that its relative humidity will be comparatively low when it attains the temperature required for cooling. Dehumidification is also accomplished by a process of adsorption. In this method, the air is passed through beds of chemicals which have a great affinity for water, such as silica gel or activated alumina, which cause the water vapor to cling to the surfaces without changing its physical structure. This action does bring about a liberation of heat, however, so that the now dry air must be cooled by means of coils. After these chemical beds have caught as much moisture as they will hold, the air flow is by-passed to new chemical beds, while the ones just used are "reactivated" —heated so that they will lose their moisture. Absorption systems employ a gas or liquid, such as calcium chloride or lithium chloride, which removes the moisture from the air and absorbs the sensible heat at the same time. One method, using what is called the "open absorption system" is something like that of spray cooling. The air is passed through a tank in which a liquid of high water absorbing characteristics is sprayed.



HUMIDITY

Humidification is usually required only in winter. Certain manufacturing processes may need it the year round, but for comfort conditioning it is provided only during the heating season. Even then, during the cold weather, it will not be practical to maintain a relative humidity of much over 20 to 30% since at higher percentages moisture will condense on window panes and other cold surfaces.

Humidification cannot be accomplished without heat. This heat may be furnished in any one of several ways. The water to be used for humidification may be heated; the air to be humidified may be heated; or the water in vaporizing may pick up the heat from the air directly and thus lower its dry bulb temperature.

The air washer, described under cooling, is the most generally used method employed in humidication, particularly in larger installations. In this device the air enters through vanes or louvers and is thereby distributed in an even flow over a bank or banks of sprays. After passing the sprays, the air continues on through eliminator plates so called because they are baffles designed to eliminate any entrained water and prevent its delivery to the conditioned space.

In smaller systems a single spray is often used and is installed either ahead of or after the heating coils.

Two general types of humidifiers are used. One is an atomizer type which breaks the water up into a fine mist, the other impinges a fine stream on a polished plate or target. Sometimes the surface on which the spray is impinged is heated to increase the humidifying capacity, but this is not always the case since it has been found to cause scale formations. Another difficulty encountered with spray nozzles is that they are likely to clog and require considerable attention. As for the water used in this process, on smaller systems, or where water is cheap and plentiful, the excess water is usually wasted, but large installations generally are designed to reclaim this water and use a good part of it over again.

Steam, used directly as a spray for humidification is practical but its use is relegated to industrial application, since it produces odors which prevent its use for comfort conditioning.

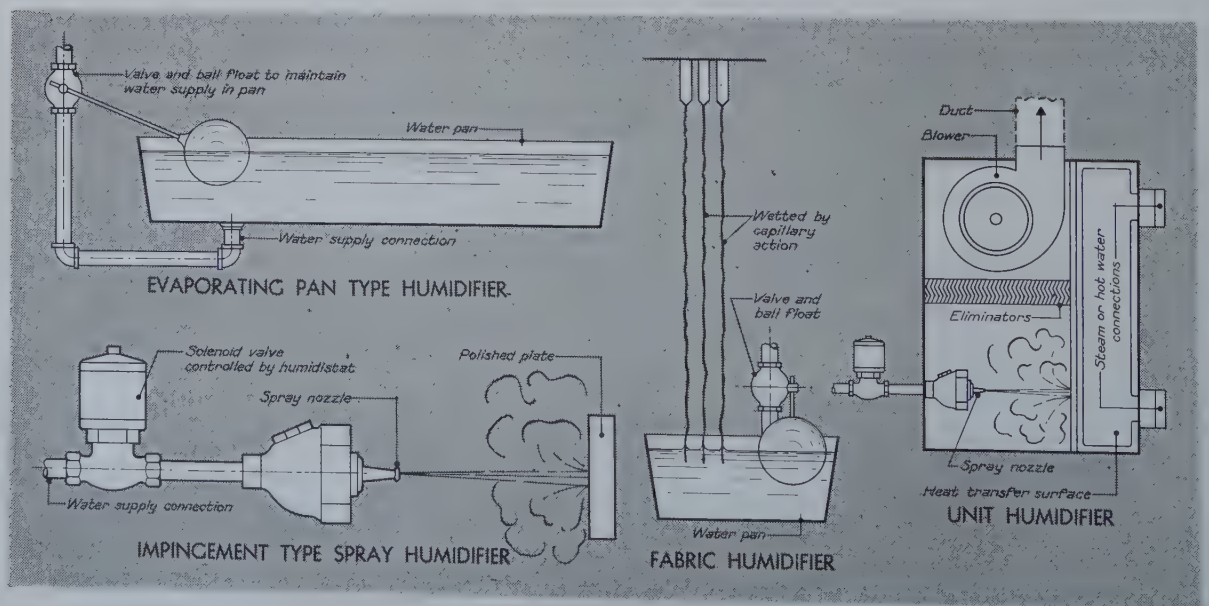
The evaporating pan type of humidier is widely used in air conditioning units. It consists of an open pan that presents as much surface to the air stream as possible. Water in the pan is kept at a constant level by means of a ball float valve, and is heated to bring about a fairly rapid surface evaporation of the water. This type of humidifier is economical in that no water is wasted, but to provide adequate humidification the pan must be of sufficient size, and this is often considerable. One disadvantage to this type is that salts collect in the pan and it requires occasional cleaning.

In the drip humidier, water is supplied to a flat pan through an electrically controlled valve called a solenoid. The pan has small holes in its bottom through which the water escapes and drops through a series of screens in the air stream, which picks up moisture.

The use of capillary surfaces, such as wetted fabrics, porous stones, etc., is another means by which humidification is accomplished. The material, exposed to the air stream with one end resting in a pan of water, relys on capillary absorption to bring the water from the pan up to the portion of its surface exposed to the air stream. The dirt or dust in the air, however, often clogs and fouls the material so that it must be cleaned at regular intervals.

Unit humidifiers for winter use in conjunction with radiator heating systems may be had in a variety of styles and sizes. They consist principally of an atomizer or spray, a coil for heating the air, or a heated surface on which to impinge a spray—and a fan or blower to provide the air circulation.

The author wishes to acknowledge the assistance of: W. Walter Timmis, Mechanical Engineer; Leslie J. Hart, Mechanical Engineer; "Heating, Ventilating and Air Conditioning Guide," and the various manufacturers of air conditioning equipment.



ARTICLE TO BE CONTINUED IN JANUARY ISSUE

Pencils are projectiles, too!

Never before has the drafting board played such a part in the struggle for . . . Victory! And as surely as it takes a superior brain to create an advanced design—so it requires a superior pencil to execute it.

Not only does a Dixon *Typhonite* Eldorado pencil facilitate the work of the man at the board, but its smoother, clearer line speeds up the work of the man at the bench. A sharp blueprint can be made only from a sharp, clean drawing! And there is a reason for *Typhonite* Eldorado's superior performance:

Eldorado's leads in each of the 17 uniform degrees are *Typhonite*. This is natural graphite smashed and demolished by typhoon centrifugal force into controlled particles of the size found best for lead making. No other drawing pencil can have *Typhonite* leads. Every draftsman works to better advantage with *Typhonite* Eldorado pencils.

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HERE, THERE, THIS & THAT

PANAMA PANORAMA

On board the "S. S. Cristobal":

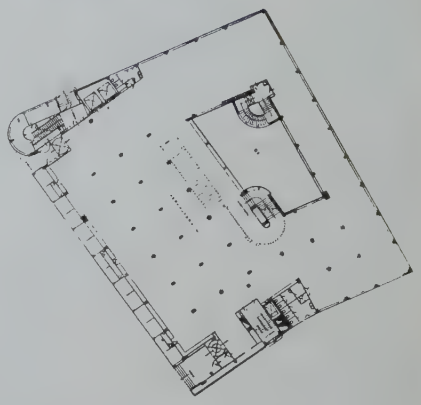
On a wave of leave-taking, Panama Pete finds himself on board the good ship "Cristobal," one of the two remaining Panama Liners in service on the New York run, the flagship "Panama" having been confiscated for transport purposes. The "Cristobal," therefore, is filled to capacity with States-bound Canal Zoners. Among them are *C. Norman Little* (the "C" in the right place for once, please note) and *Ralph Otten,* both of the Canal Zone Architect's office.

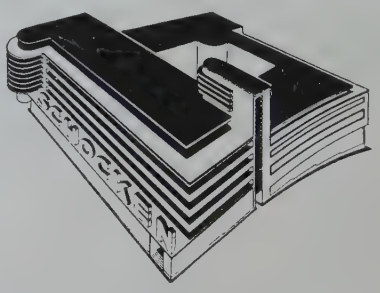
With the "goings" there are also some "comings"! Recent arrivals among the architects are *Bob Stoll, Arlie (Boo Poo) Purdue, George Rockrise,* a Syracuse lad formerly with Harrison & Fouilhoux, *Jimmy Wise* of Columbia, and *Bob Ballinger* of Cornell, who had the unique experience of sailing down on a transport that was blacked out all the way.

A fairly ambitious hotel project is being promoted by States backers for an El Volcan site. This part of the interior of Panama near the Costa Rican border is one of the most beautiful sections of the country and, being at a high elevation, is remarkably cool; hence its growing popularity as a resort. A well-rendered perspective and plan of the proposed project, showing hotel and swimming pool, was exhibited recently in a local shop window and will be on view soon in Rockefeller Plaza, New York City. *Acock & Lloyd,* New York architects, are handling the job, and I am sorry that I cannot honestly award any Panamanian orchids to their design. There seems to be just two types of architecture that fit well into the Central American scene. On the conservative side there is the Spanish Colonial, and on the progressive side there is the truly modern. I feel that any one of several Panamanian architects would have turned out a more creditable design.

The State Department is to be commended for its appointment of

(Continued on page 48)





The retrospective exhibition of the work of Eric Mendelsohn, which opened at the Museum of Modern Art, New York, on November 25th, includes executed works and projects designed in Germany, Russia, England, Palestine, and the United States, from 1914-1941. Some of his English work was done in partnership with Serge Chermayeff. Illustrated (above, right) are sketches, plans, of the Schocken department store in Stuttgart, Germany. Below, left, is the Anglo-Palestine Bank, Jerusalem; the Government Hospital, in Haifa, Palestine, is shown below, right. The exhibition will be on view at the Museum of Modern Art until January 11.

USG NEWS-FACTS

PYROFILL SLAB EDITION

December 1941 Vol. 1 No. 12

Published by the UNITED STATES GYPSUM COMPANY, 300 West Adams Street, Chicago

MANY "SUBSTITUTE" MATERIALS AS GOOD OR BETTER THAN ORIGINALS

1. Sheetrock can be substituted for metal on cold air return ducts of air conditioning systems.

2. Roll roofing can be used in place of sheet metal or copper for valleys and flashing of certain parts of a roof.

3. Asphalt shingles can be used on hips and ridges in place of metal—also in place of metal shingles.

4. Blendtex tile and plank can be used in commercial buildings in place of metal ceilings, as can also Sheetrock.

5. Asbestos siding, and stucco, which need no paint, can be used for exteriors to cut down the lead requirements per job.

6. Casein and resin base paint may be used on interior in place of lead and oil paint.

7. Rollbrick siding can be used to refinish the outside of old buildings in place of paint.

8. Sheetrock can be used for shower cabinets in place of metal, if it is thoroughly waterproofed and enameled.

9. Oriental Colored Finish in colors may be used as the finish coat of plaster in place of paint.

10. Sheetrock for interior walls requires a minimum of vital Defense materials, including nails. Its decoration also can be carried out without drawing on critical Defense needs.

11. USG resilient plastering systems using Rocklath may be substituted for metal lath on ceilings of large rooms.

When is a substitute not a substitute? Thousands of architects will be answering this question as the scarcity of vital Defense materials necessitates the search for products which are available to do a given job.

This search will lead many to use old products in new ways and will lead to the acceptance of new products developed during the Emergency. But the easiest and most satisfactory substitutes will be found in materials and products which are neither new developments nor which require them to be used in a different manner than intended. Architects and designers, in specifying and using well-known products for the first time, will discover in countless cases that they are as good or better than the materials habitually specified.

As an example, many architectural offices will discover the advantages of casein and resin base paints for finishing—although these paints have been widely accepted by their professional brothers for a number of years. In the same way, most of the materials in the list at the left will not be substitutions at all to thousands of U. S. architects who have discovered the economy, performance, appearance and installability of the suggested available products.

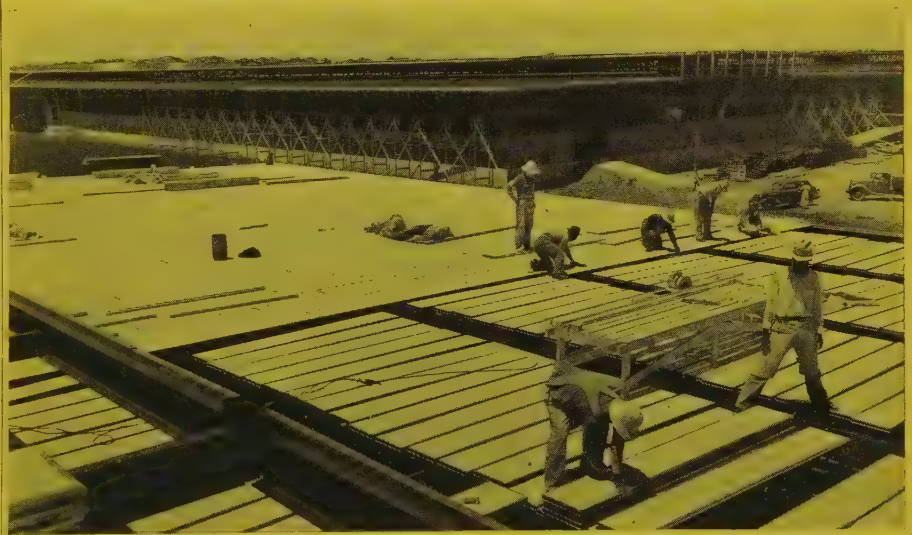
FIRST GYPSUM DECK EVER POURED STILL IN PLACE

In 1902 and 1903 the Ingersoll-Rand Company erected a plant at Phillipsburg, New Jersey. A considerable portion of the plant was covered with a cast-in-place gypsum roof slab.

So far as is known, this slab was the first poured gypsum ever to be erected in the United States. After almost 40 years that part of the original slab which had not been disturbed by alterations is still in place!

Ingersoll-Rand Company have continued to use gypsum roof construction during the many years since this plant has been operating. Last September a new unit was installed with a poured gypsum deck—a striking testimonial to the satisfaction and service rendered by gypsum slab construction.

MILLIONS (of feet of USG Plank) FOR DEFENSE!

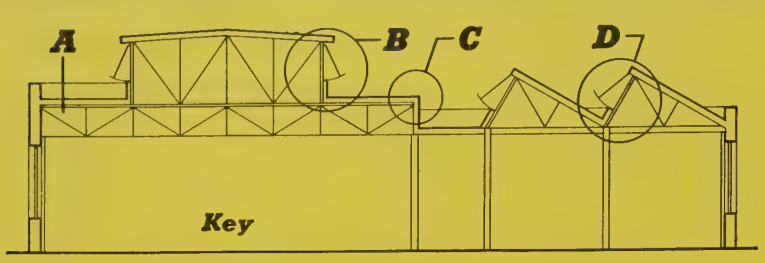


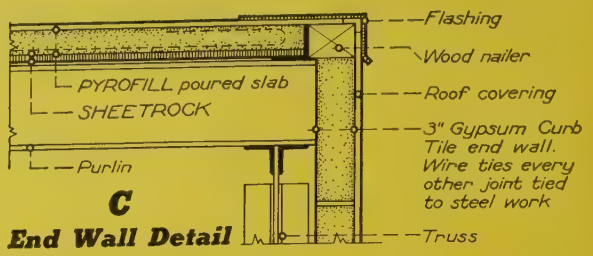
CHICAGO, ILL.—Astronomical figures are no novelty to Americans who are keeping up to date on Defense production. Probably no one will be surprised that United States Gypsum Company have already sold over 10 million square feet of USG steel roof deck in the current year. One single installation now being erected here in Chicago amounts to almost 600,000 square feet—an area of over 13 acres of roof deck.

In the photograph above we see workmen installing USG metal-edge gypsum plank on a Defense project in San Antonio, whose size dwarfs even the Chicago plant. In this Texas depot supply warehouse the United States Gypsum Company are supplying over 1 million square feet of plank—over 26 acres!

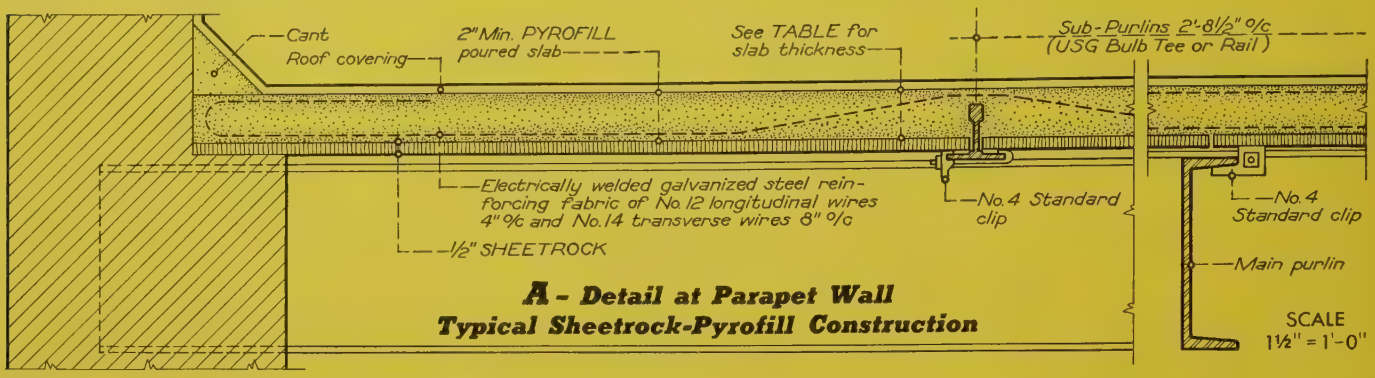
The USG steel deck construction, however, refuses to be counted out in the contest and has just scored a new "biggest" by being specified on a plant requiring 2½ million square feet—almost 1/10th of a square mile!

In addition to these two types of construction the other USG deck products—reinforced gypsum tile and Pyrofill poured gypsum deck—are playing an important part in the construction of America's buildings during the critical Defense period.

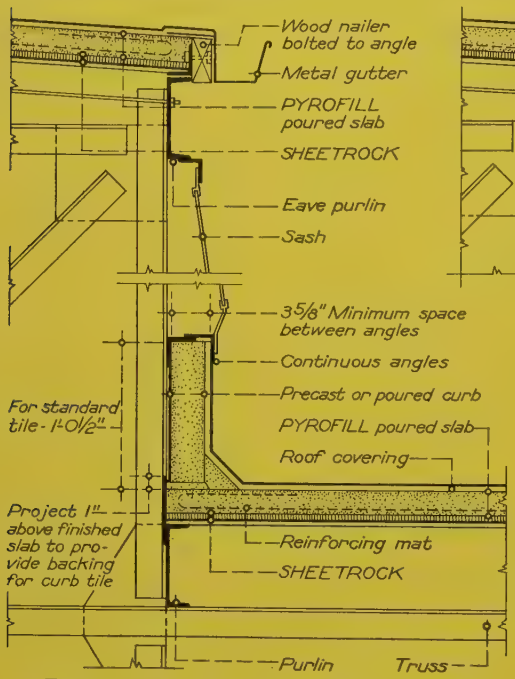




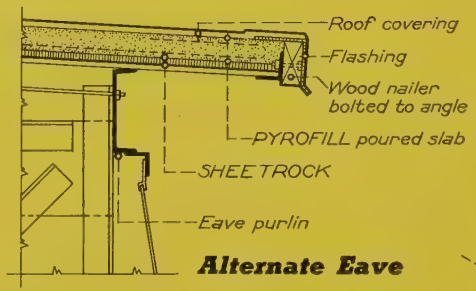
C
End Wall Detail


Cant
Roof covering
2" Min. PYROFILL poured slab
See TABLE for slab thickness
Sub-Purlins 2'-8½" o/c (USG Bulb Tee or Rail)
Electrically welded galvanized steel reinforcing fabric of No.12 longitudinal wires 4" o/c and No.14 transverse wires 8" o/c
No.4 Standard clip
No.4 Standard clip
½" SHEETROCK
Main purlin
SCALE 1½" = 1'-0"

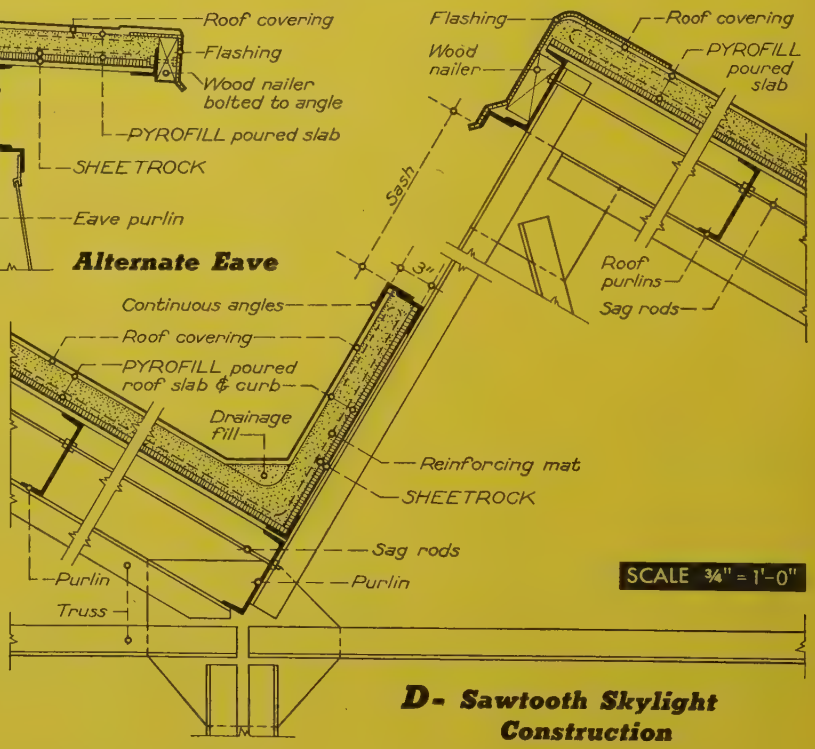
A - Detail at Parapet Wall
Typical Sheetrock-Pyrofill Construction



B - Curb and Eave Construction for Monitor



Alternate Eave



D - Sawtooth Skylight Construction

Size of Sub-Purlins spaced 2'-8½" o/c	Allowable Span †		½" Sheetrock		
	18,000 f	20,000 f	Total Thick	*Lbs./ Sq. Ft.	Btu Loss
8# Bulb Tee	6'- 6"	6'-10"	2½"	11.5	.38
8.3# Bulb Tee	7'- 7"	8'- 0"	2½"	11.5	.38
12# Rail	8'-11"	9'- 3"	2½"	12.0	.38
16# Rail	11'- 2"	11'- 6"	2½"	12.5	.38
20# Rail	13'- 3"	13'- 8"	3"	15.0	?

*Including Sub-Purlins. † Total Dead & Live load 45 lbs. per sq. ft., M = 1/10 WL.

USG Deck Constructions

Millions of square feet of USG roof and floor deck constructions are in use. They are of 3 general types consisting of (1) precast gypsum planks or gypsum tiles, (2) steel decks, and (3) poured reinforced gypsum slabs.

Pyrofill

Pyrofill slabs are composed of reinforced gypsum poured-in-place over permanent forms of Sheetrock. There are no joints for heat loss and the monolithic construction helps stiffen the building structure. Upon the supporting steel purlins, sub-purlins are placed 2'-8½" o/c. Sheetrock in ½" thickness is placed as permanent form work between the purlins. After the reinforcing has been placed over the permanent forms Pyrofill is poured and screeded to the proper thickness, making the total depth of slab including the form 2½". Curbs, end walls, etc., are usually constructed of precast gypsum tile. They may also be made of Sheetrock-Pyrofill or Weatherwood-Pyrofill construction.

Over Light Steel Framing

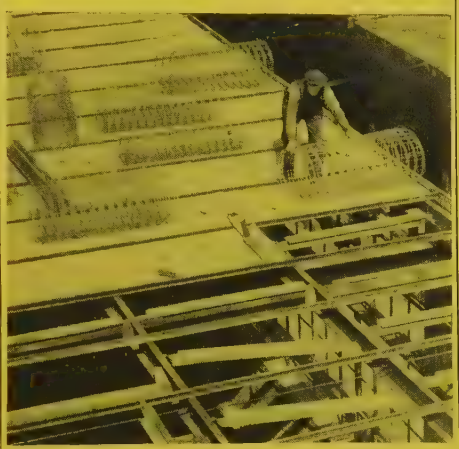
The Pyrofill construction may be also used advantageously for floors or roofs over light steel beams or bar joists. No sub-purlins are required if the steel spacing does not exceed 3'-0". The forms of Sheetrock are placed to span 2 or more supports. The reinforcing and construction of the slab are the same as for the construction with purlins. This construction will be found economical in light occupancy buildings and presents the same advantages as the standard construction.

Advantages

Whenever steel framing is used (whether the roof be flat, 45° pitched, monitor, sawtooth, Pond, Aiken, etc.) the inherent value of either Sheetrock-Pyrofill construction may be advantageously employed.

The inherent advantages of gypsum for fireproofing are universally recognized.

For standard slab thicknesses and sub-purlin sizes Sheetrock-Pyrofill construction weighs only 12½ pounds per square foot (see table at bottom of next page). This light weight, as compared with other masonry construction, permits savings throughout the structure, including columns and footings.



The undersurface of the Pyrofill Roof Deck consists of Sheetrock 2'-8" wide, in lengths equal to the purlin spacing so that end joints occur over the main purlins. With the form joints thus concealed, a smooth, attractive, light-reflecting undersurface results.

The simplicity of the construction, plus the light weight and the speed with which it is installed make Sheetrock-Pyrofill roof construction extremely economical.

Gypsum is among the highest in insulating value of the fireproof structural building materials. It is effective in protecting the building from extremes of outside temperature, both in summer and in winter.

For Greatest Economy

Usually a span of approximately 8 feet between main purlins with a 2½" slab thickness will be found most economical.

If channels are used as main purlins on sloping roofs, they should open upwards to permit proper clipping of the sub-purlins with No. 4 purlin clip.

By preserving uniformity of span, labor costs are reduced and standard lengths of Sheetrock or Weatherwood may be used.

While flat roofs require less labor than steep ones, the difference up to 30° pitch is not of sufficient importance to warrant serious consideration. On a roof, however, over 45° pitch, it may be necessary to back-form from the top in order to obtain a satisfactory job. This will obviously add to the cost of the roof.

Sheetrock-Pyrofill and Weatherwood-Pyrofill roof deck construction can be specified with assurance of an excellent job.

A. I. A. FILE NO. 4L

Pyrofill Specifications

A. I. A. FILE NO. 4L

NOTE—Notes in small type are explanatory and are not a part of the Specification. Additional copies of this Specification will be gladly supplied on request—to be used for interlining and crossing out in preparing copy for typing.

1. GENERAL CONDITIONS. The current edition of the A. I. A. General Conditions are part of this Specification.

2. WORK INCLUDED. This Section comprises all labor and materials for the installation of reinforced Pyrofill slabs using ½" Sheetrock over areas shown on the drawings.

The Sheetrock-Pyrofill type of construction may be used for floors or roofs over light steel beams or bar joists without sub-purlins if the steel spacing does not exceed 3'-0". For supporting steel spaced over 3'-0" sub-purlins are used.

3. ALLOWANCE. Allow the sum of..... dollars to cover Pyrofill slab construction to be furnished and installed by an experienced Gypsum roof contractor.

The Architect may wish to arrange for this work separately in order to maintain close control over it. The A. I. A. *Handbook of Architectural Practice* says that such allowances form an entirely legitimate and highly useful method of covering items of such a nature that good results are not to be had from competitive bidding. Nevertheless it is well to completely specify and bind this Section with the other Specifications so that the General Contractor and others can refer to them and to understand what work is to be done under the allowance provision.

4. COOPERATION WITH OTHER TRADES. Refer particularly to the sections on Structural Steel; Roofing, Sheet Metal and Skylights; and any others describing work which is to be carried on in conjunction with the erection of Pyrofill slabs. Cooperate fully with persons carrying on such other work so as to cause no delay, interference or harm to the Owner's best interests.

5. MATERIALS IN GENERAL. Use products manufactured by the United States Gypsum Company, Chicago.

6. SUB-PURLINS. For purlins use steel (. . . *tees or rails* . . .) of sizes and spacings required or indicated on the structural plans. Furnish purlins with a shop coat of paint. Provide suitable clips or spot welds to rigidly secure sub-purlins to other structural support.

7. SHEETROCK FORMS. Furnish ½" thick Sheetrock 2'-8" wide and mill-made to exact lengths not over 10'-0" to match the main purlin spacing.

8. PYROFILL. Furnish Pyrofill consisting of a mix-mixture of 12½ pounds of clean soft wood fiber to every 87½ pounds of calcined gypsum.

9. REINFORCEMENT. Furnish galvanized electrically-welded steel fabric made to USG specifications, consisting of No. 12 longitudinal wires 4″ o/c and No. 14 transverse wires 8″ o/c having an effective sectional area of .026 square miles per foot width of slab.

10. PRECAST CURB TILE. Where required by the drawings furnish 3″ thick precast gypsum curb tile. For end wall construction furnish Pyrobar Gypsum Curb Tile 3″ x 15″ x 30″ non-reinforced. Where curb tile carries a roof load or retains drainage fill, furnish reinforced Pyrobar Gypsum Curb Tile.

11. GYPSUM MORTAR. Use gypsum mortar consisting of 1 part of unfibered gypsum cement plaster and not to exceed 2 parts of clean sand.

12. ERECTION IN GENERAL. All Pyrofill construction including (. . . *Sheetrock, sub-purlins, curbs, and walls, saddles, drainage fill* . . .) is to be completely erected by an experienced Gypsum roof contractor. Arrange reinforcement to be continuous. Make the Pyrofill plastic with water, pour over forms and screed to a true and even surface ready to receive the (. . . *floor or roof* . . .) finish.

13. SLAB CONSTRUCTION WITH PURLINS. The total thickness of the slab including the forms is to be 2½″ thick. Stagger joints in sub-purlins or tie them rigidly together.

14. SLAB CONSTRUCTION WITHOUT PURLINS Lay form boards in lengths to span over 2 or more supports with the ends held in alignment by means of special clips. The total thickness of the slab including the forms is to be 2½″ thick.

15. CURBS. Construct curbs of (. . . *poured Sheetrock Pyrofill, or precast gypsum curb tile set in gypsum mortar* . . .).

16. END WALLS. Construct end walls of (. . . *monitors, sawtooth skylights, "A" frames* . . .) of Pyrobar Gypsum Curb Tile set in gypsum mortar.

17. DRAINAGE FILL. Provide Pyrobar saddles and drainage pitches to direct roof water to drainage outlets.

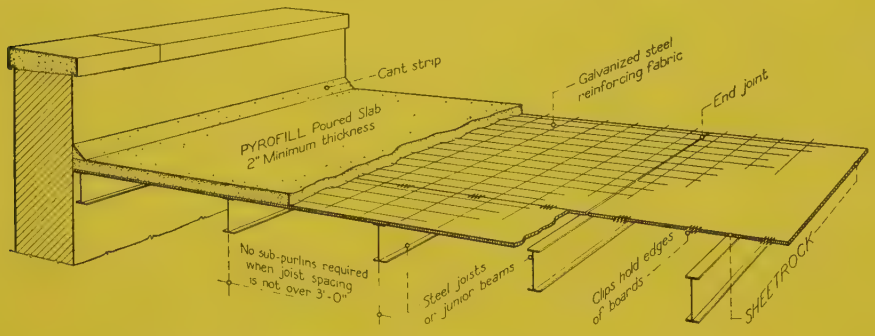

Cant strip
Galvanized steel reinforcing fabric
End joint
PYROFILL Poured Slab 2" Minimum thickness
No sub-purlins required when joist spacing is not over 3'-0"
Steel joists or Junior beams
Clips hold edges of boards
SHEETROCK

Diagram of Pyrofill construction without fill

Specification Notes

Specify under ROOFING. Apply roofing to Pyrofill decks as soon as possible after the slab is erected and in not less than 20 days.

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PLASTER BASES. A complete line of standard metal laths, gypsum lath, insulation board lath, metal accessories and light weight economical Pyrobar gypsum partition tile.

ROOFS, FLOORS AND PARTITIONS. Pre-cast and poured gypsum slabs, and ribbed steel decks for roofs and floors. Gypsum block for partitions and fireproofing.

SHEATHING. An insulating board type and Gyplap the fireproof gypsum board sheathing.

SHEETROCK. Fireproof Gypsum panel material for dry wall construction to receive paint, wall paper or any other decoration. Also available predecorated to reproduce wood grain.

SHINGLES. Asphalt and asbestos cement shingles in a variety of styles and colors.

SIDING. Asbestos cement siding in a variety of colors, also with self-cleaning Glatex surface.

THERMAL INSULATION. Board, blanket, loose fill and reflective types.

TRUSSTEEL STUDS. A system of light weight hollow steel partition framing, for speedy erection and non-inflammability.

USG PLASTERING SYSTEMS. Construction methods for applying Rocklath or Metal Lath to wood frame, steel or masonry, to reduce sound transmission and to minimize plaster cracks and joist streaking.

WEATHERWOOD. A panel material combining construction, insulation and sound deadening with interior finish.

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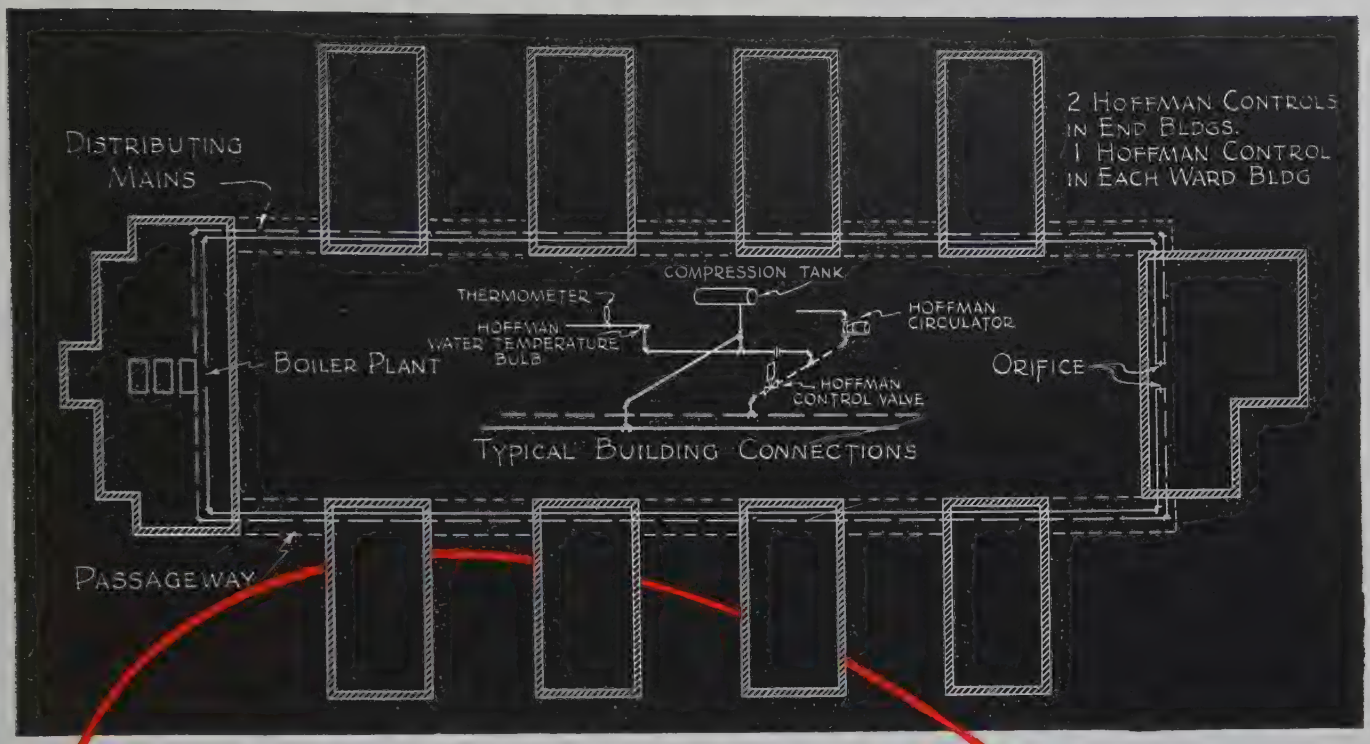
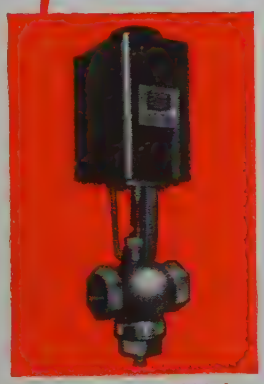
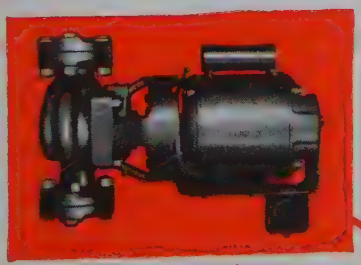


CONTINUOUSLY CIRCULATED HOT WATER

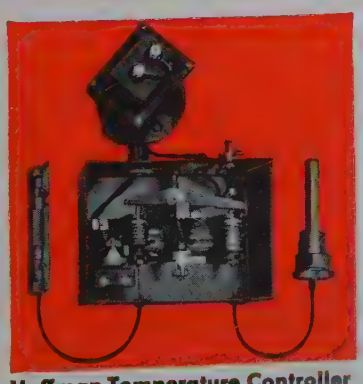
Wins heating contract in Defense Hospital!



Hoffman Control Valve



Hoffman Circulator



Hoffman Temperature Controller

The above diagram shows a typical application of Hoffman Hot Water Controlled Heat—today's most advanced method of distributing heat in accordance with the weather. In this hospital, the temperature in ten detached buildings is kept at a *constant degree* by Hoffman control units.

Hoffman Hot Water Controlled Heat combines *continuous circulation* with an outdoor temperature controlling device which effects a constant balance between heat loss and heat supply. Heat is supplied to the radiators on a gradually ascending or descending temperature scale—never in bursts of high temperature water.

This sensitive modulation of the heat supply confers two substantial benefits . . . the comfort of a uniform temperature and the economy resulting from elimination of over-heating. In addition, continuous forced circulation permits a *material reduction in the size of radiators, piping, boilers and firing units.*

Any automatically fired hot water boiler can be equipped with the units of Hoffman Hot Water Controlled Heat. Write today for booklets which give complete design and operating information.

HOFFMAN SPECIALTY COMPANY, Dept. PP-12, Indianapolis, Indiana

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CONTROLLED HEAT

Hoffman Hot Water and Steam Specialties are sold everywhere by leading wholesalers of Heating and Plumbing equipment.

(*Continued from page 42*)

Rogelio Navarro to act as consulting architect for the new embassy to be built in the swank La Cresta residential sector of Panama. A happier choice could hardly have been made as Rogelio is well qualified by training (University of Virginia) and long experience in the local building field to render valuable service as consultant. Plans for the embassy are almost complete and construction should start in a couple of months. It will take about a year to complete the project. The two story structure will have extensive gardens, salons for receptions, eight bedrooms, terraces, an entire wing for servants' quarters, and a basement with garage, laundry, etc.—the whole thing to cost about a quarter of a million.

Shortly before sailing I was privileged to visit Rogelio's new residence which is under construction on a perfect hill site practically surrounded by the Panama Golf Club. From the terraces there are vistas galore of the sea, mountains, and the ruins of Old Panama. I look forward to seeing what promises to be one of Panama's most attractive residences nearing completion when I return to the Isthmus. Hasta luego! PANAMA PETE

BOSTON NOTES

On October 25 Governor Saltonstall signed our permissive bill for architectural registration. So there she stands, a genteel, legislative hunk where before there was nothing; a figurehead whose birth smile is not entirely caused by gas, and if it's toothless what baby's isn't? Just keep your tootin' and she'll teeth to beat hell, when the time comes. Many worked hard for the bill, a few were covertly against it, and there was no lobbyist in the picture.

Employment remains unchanged in its strong motion towards the engineers, as one by one the architectural offices dry up. Pay day at *Stone & Webster* must shake the F. R. bank to its foundations.

Housing has two slum clearance jobs on the boards—*Richard Shaw's,* finished in November, and a new South Boston project by a combination of architects probably centered round *Maginnis and Walsh.*

To my knowledge only three Boston practitioners have handled defense housing commissions, *Hugh Stubbins, Jr.* (FWA), *John M. Gray,* and *Royal Barry Wills* (USHA). The first two are building and the third just left the drawing boards, thereby permitting eight or nine sloggers to get reacquainted with their families. This project, titled Mass. 19023, resulted in so great a burst of spirit among the help that they formed the Massonott A. C. and elected *H. M. L. Giduz* (Alec the Excavator) as permanent president.

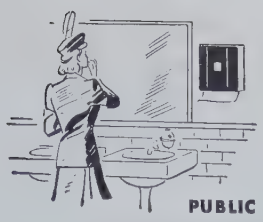
Increasingly one hears the question, "Do you think that the sometime profession of architecture will emerge in recognizable form after the present emergency ceases?" To say the smart word, samplings here and there have a negative ring. *P. A. L. Foulds,* dean of heating experts, said "No," while his heating hearties, Tracy and Wilkinson, smiled serenely from the everlasting security of their pipes. An electrical engineer, a sanitary specialist, and others suggested that the world would never stop kicking their dog around until he was fit only for sausage and the dinner table. I have record of a contention that the architect's fierce detachment from eye-gouging and all cohesive technique for self-preservation foretells his downfall; that the only positive step now being taken is the modernists' private play for favor with their Uncle Samovich. To paraphrase our ace fighter and white hope, Architect *Richard Shaw,* a fellow can't point the finger at encroachers until he has put his own house in order, and 'twere well to remember that the house is made up of something besides expensive finish and a big front door. The biggest part of the old home is the structure, the hidden sloggers who haven't been planed down and carved into fancy shapes, picked out in gold leaf. A corner post lacks status, but it does more to keep the roof on than the cut glass door-knob to milady's chamber (which has been known to draw a bead on silk stockings and burn the jernt down). To encroachers these men are just as useful as full-fledged architects would be, and rather less inhibited. If you don't control them you fail to master the problem, and that entails the formidable job of building an employer-employee group. But here's a possible hint.

The Architectural League of Boston, largest unaffiliated employee group hereabouts, has perked up upon hearing that the Massachusetts State Association of Architects is about to formulate a schedule of charges for professional service. These lads keep a few steam shovels busy in their spare time and feel the poignancy of proprietorial headaches based in their spare bed

(*Continued on page 56*)

The Modular Service Association, Boston, recently assisted the National Housing Administration of Canada in developing and applying standardized details, based on the 4-inch increment, to a project at Sorel, Quebec. Details conformed closely to those developed by Committee A62 of the American Standards Association which loaned its architect, Prentice Bradley, to cooperate with the contractor. All schedules and materials for the basement and two-story building were worked out and pre-assembled in sections on the site. The job demonstrated that an architect's layout can be put on the 4-inch basis with no appreciable alteration to the original design, and that standard details can be coordinated.

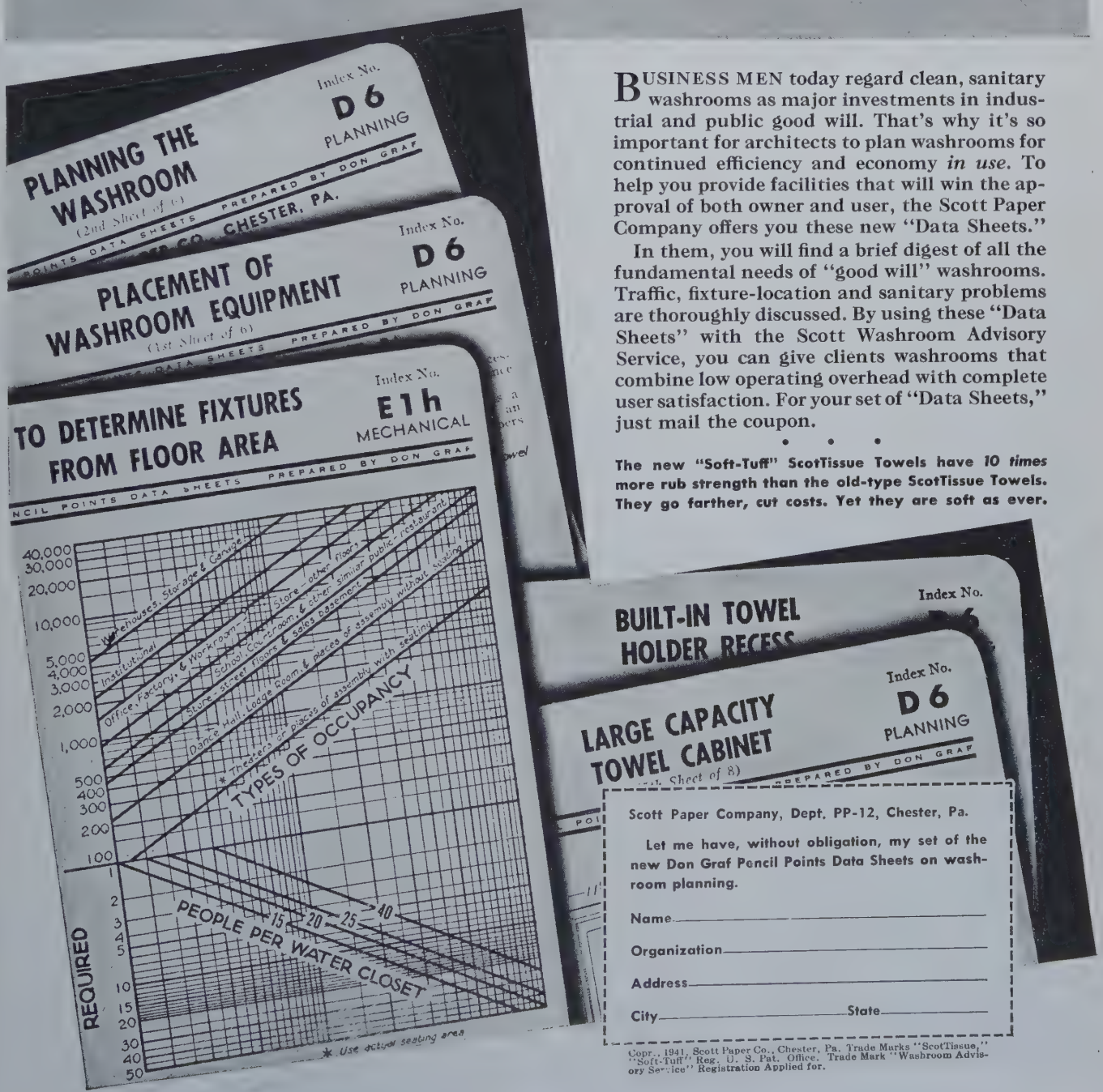
FACTORY WASHROOMS



PUBLIC WASHROOMS

OFFICE BUILDING WASHROOMS

All can be planned for greater EFFICIENCY and ECONOMY with these NEW DATA SHEETS



BUSINESS MEN today regard clean, sanitary washrooms as major investments in industrial and public good will. That's why it's so important for architects to plan washrooms for continued efficiency and economy *in use*. To help you provide facilities that will win the approval of both owner and user, the Scott Paper Company offers you these new "Data Sheets."

In them, you will find a brief digest of all the fundamental needs of "good will" washrooms. Traffic, fixture-location and sanitary problems are thoroughly discussed. By using these "Data Sheets" with the Scott Washroom Advisory Service, you can give clients washrooms that combine low operating overhead with complete user satisfaction. For your set of "Data Sheets," just mail the coupon.

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PUBLICATIONS ON MATERIALS AND EQUIPMENT

of Interest to Architects, Draftsmen, and Specification Writers

Publications mentioned here are all 8½ x 11 unless otherwise noted, and will be sent free, except as indicated, upon request to readers of PENCIL POINTS *by the firm issuing them. When writing for these items please mention* PENCIL POINTS.

ACOUSTICS—"Less Noise—Better Hearing," a 92-page bound book from The Celotex Corp., 919 N. Michigan Ave., Chicago, presents an outline of the essentials of architectural acoustics for the practising architect and engineer. It discusses the physics of sound, acoustics of auditoriums, acoustical correction, sound absorbing materials, sound insulation, has a brief list of books on architectural acoustics for those wishing to study the subject in further detail. The book is replete with charts, diagrams, tables, illustrations. (A.I.A. File No. 39-B, priced at $1).

SURFACING MATERIAL — The Barclay line of plastic surfacing material, available in sheet form for finishing walls, ceilings, other types of flat surfaces, is presented in a 12-page booklet from Barclay Mfg. Co. Inc., 385 Gerard Ave., New York. The firm's three types of material—Tileboard, Panelboard, and Stream-Lined — are shown in typical installations. Short form specifications, application details, and actual color samples are included.

LEAD ROOFING—A 20-page catalog, A.I.A. No. 12-C, from Revere Copper & Brass, Inc., 230 Park Ave., New York, describes Roofloy, a sheet lead roofing for use on practically every type of building. Details on batten seam roofing, standing seam roofing, together with roofing specifications, are given. A page is devoted to ornamental spandrels made with Roofloy.

FLOORING AND DECKING—"Heavy Duty Flooring and Roof Decking of Southern Pine" is a revised technical publication recently issued by the Southern Pine Association, Canal Bldg., New Orleans, La. It contains design information on heavy flooring and roof decking, furnishes a description of the various grades of southern pine suitable for many uses. Recommendations on the correct application of these grades and sizes are also presented.

DOOR HINGES—Catalog No. 10 (A.I.A. File No. 27-B-1), from Soss Mfg. Co., 21777 Hoover Road, Detroit, Mich. shows the firm's line of invisible door hinges. Presented in 24 pages are blue-print type illustrations showing cross section details, instructions on how to install the hinges.

From the same firm: 24-page booklet, 3¾ x 6¾, "How to Obtain Beautiful Effects," which presents effective ideas for remodeling and modernizing doors, buffets, china closets, chifforobes, other ideas for the home cabinet maker and carpenter.

SISALKRAFT PRODUCTS — A 4-page, 5½ x 8¼ folder describing the use of Sisalkraft for backing up stucco is available from The Sisalkraft Co., 55 New Montgomery St., San Francisco, Calif. Described also is the use of Sisalkraft with and without solid wood sheathing, and the use of copper armored Sisalkraft for window and door flashing.

ARC WELDING COST BOOKLET—Cost of arc welding electrodes can be estimated for welding any type of joint on any thickness by the use of the new "Electrode Consumption Calculator," an 8-page booklet from Air Reduction Co., Inc., 60 E. 42nd St., New York. Included are consumption figures for both bare and shielded arc electrodes employed for making filet welds, square groove butt joints, "V" and "U" groove butt joints, etc. The amount of steel deposited per linear foot of weld is also shown. Basic formulas used in the calculations are included.

CEMENT HANDBOOK—A study of white cement and pertinent facts about its many uses are explained in a convenient, vest-pocket handbook recently published by Trinity Portland Cement Co., Dallas, Texas. Tests to evaluate the whiteness of different cements are explained. The firm also offers free samples of its cement to those wishing to make the suggested tests.

(*Continued on page 52*)

The attractive Nairn Linoleum walls and floor make this living-room in the boys' cottage at the Southbury Training School a very pleasant place. The outstanding durability of Nairn Linoleum will keep the room in good condition for years, in spite of the "wear and tear" of a houseful of boys.

Here's a specification that meets every "endurance" test for public buildings

—and provides color and beauty, too!

Exterior of the Southbury Training School of the Connecticut State Department of Public Works, Southbury, Connecticut.

NAIRN LINOLEUM is the architect's answer for the floors and walls of public buildings, where long-lived, hard-wearing materials are "musts."

Exceptionally durable against heavy daily foot traffic, Nairn floors can take it for years with hardly a sign of wear. Nairn walls are practically *permanent.* Under normal conditions they will last as long as the building itself!

But Nairn Linoleum does more than wear well. It is sound-deadening, easy on the feet, and easy to maintain. Nairn floors need only regular cleaning and waxing. A damp cloth removes dust or spatters from Nairn walls.

In addition to its sturdiness, Nairn Linoleum brings new beauty. Obtainable in a wide variety of colors and patterns, it makes possible charming decorative effects through the use of contrasting insets and borders.

Add moderate first cost and negligible upkeep to the other Nairn features and you have the perfect public building specification for both floors and walls. When installed by Authorized Contractors, Nairn Linoleum is fully guaranteed.

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NAIRN

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LINOLEUM FLOORS & WALLS

PUBLICATIONS ON MATERIALS AND EQUIPMENT

(Continued from page 50)

MARBLE MANTELS—A four-page folder (A.I.A. File No. 22-A-21), from Vermont Marble Co., Proctor, Vermont, discusses the use of marble on fireplaces in various types of homes. A separate two-page sheet gives elevation sketches, as well as plans, details, and sections of various types of marble mantels.

RAWHIDE COVERINGS—Gutmann & Co., Inc., 1511 Webster Ave., Chicago, has available a 4-page folder, "Styling in Rawhide," showing application of the firm's Tufraw rawhide material as used for paneling, table top covering, and covering for lamps, desks, furniture, miscellaneous appointments.

Also available: folders featuring Tufraw Rawhide for luggage covering, and information on the adaptability of this material for interior decoration.

KNAPP METAL CASINGS
For Today's Housing Problems
HERE is the answer to modern housing's demand for casings that are simple, durable and easy to keep clean.
They fit present construction needs—for their feature of quick application contributes to early completion.
They are rugged and fire and vermin safe—with graceful lines.
You will find Knapp Metal Casings ideal for your requirements. Write for details.
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SEE OUR CATALOG IN SWEET'S
The Knapp Quality line includes: window and door trim • window stools • base • chair rails • blackboard trim and chalk trough • picture moulds • corner beads • grounds • screeds • and many other kindred products.
KNAPP METAL TRIM
KNAPP BROS • MANUFACTURING CO •
GENERAL OFFICES • JOLIET, ILLINOIS

ELECTRIC SPECIALTIES—An 18-page catalog, made up of loose sheets fastened in a folder, may be had from Prometheus Electric Corp., 360 W. 13th St., New York. Described and illustrated are electric plate warmers, towel dryers, clothes dryers (A.I.A. File No. 31-G-33), and wall type heaters for bathrooms and marine use, as well as organ loft heaters (A.I.A. File No. 31-G-31).

FORM TYING DEVICES—Richmond Screw Anchor Co., Inc., 816 Liberty Ave., Brooklyn, N. Y., has a 48-page catalog on its many form tying devices and accessories for concrete construction. Included are prefabricated form ties, hanger ties, beam wrapping, clamp systems, anchors, other reinforcing steel accessories, together with drawings showing the application of the various devices.

DRAFTING ROOM EQUIPMENT—Catalog No. 12, 48 pages, (A.I.A. File No. 35-H-31), from Hamilton Mfg. Co., Two Rivers, Wis., is divided into three sections, illustrates and describes the firm's line of tracing files, drafting tables, and such drafting room accessories as chairs and stools, drawing boards, other accessories to increase drafting room efficiency. A 16-page price list is included.

WHITE LEAD PAINT—"What to Expect from White Lead Paint," a 24-page catalog from Lead Industries Association, 420 Lexington Ave., New York, discusses the selection and application of white lead paint for interior and exterior use. A 4-page insert in the catalog contains a simplified white lead painting guide.

BRIDGE RAILINGS—"Bridge Railings, Their Design and Construction," from the American Institute of Steel Construction, Inc., 101 Park Ave., New York, presents in its 24 pages, a study of 15 typical details of various types of structural steel railings designed in accordance with functional and æsthetic requirements.

STAIR TREADS—A 4-page folder from National Bronze & Aluminum Foundry Co., E. 88th and Laisy Ave., Cleveland, Ohio, presents its Ten-Lox anti-slip stair treads, thresholds, and floor tiles. A separate detail sheet shows shapes, sizes, and styles in actual size.

(Continued on page 54)

Is a public seating problem worrying you?

No architect need hesitate to call for help when it comes to solving seating problems. For public seating is a study in itself.

In the seating of churches, theatres, schools, auditoriums—each presents its own special problems. And they're usually tough ones—with churches, for instance, such things as ecclesiastic symbolism, design harmony in pewing, furniture and woodwork. With theatres—floor slope and sight lines. But you can depend upon the American Seating Company for the right answers to all those problems. You'll be getting the facts straight from public seating headquarters—the place where the greatest public seating experience in the world has been accumulating for many, many years. There's not the slightest obligation on your part. So, whenever a public seating problem worries you, let's work it out together. We'd like to be of help.

American Seating Company

GRAND RAPIDS, MICHIGAN

World's leader in public seating. Manufacturers of Theatre, School, Church, Auditorium, Stadium and Transportation Seating.

Branch Offices and Distributors in 73 Principal Cities.

PUBLICATIONS ON MATERIALS AND EQUIPMENT

(*Continued from page 52*)

FUEL OIL BURNER—The Johnson fuel oil burner, Type 30-AV, a commercial and industrial type rotary oil burner, is described in an 8-page catalog from S. T. Johnson Co., 401 N. Broad St., Philadelphia. This particular burner is for use with No. 5 or lighter oils and is so approved by the Underwriters' Laboratory.

FURNITURE CUSHIONING—Construction manual on Latex Foam, where it comes from, what it is made of, and its application. This 48-page catalog gives specifications, pictures construction procedure on furniture cushions using Koyalon Foam. From United States Rubber Co., Mishawaka, Indiana.

Also from the same firm: 12-page catalog giving sizes and descriptions of such standard items using Koyalon Foam as bar stool cushions, theatre seat cushions, kneeling pads.

ASBESTOS SHINGLES—A 6-page folder, printed in natural color, illustrates the American Colonial asbestos shingles made by Johns-Manville Sales Corp., 22 E. 40th St., New York.

GLASS BLOCKS—The Insulux Products Division of Owens-Illinois Glass Co., Toledo, Ohio, has prepared three 4-page folders discussing the application of Insulux glass block to light, maintenance and heating problems.

FORMICA APPLICATIONS—A new 12-page catalog from Formica Insulation Co., 4613 Spring Grove Ave., Cincinnati, Ohio, illustrates the use of Formica for various decorative and building purposes. The catalog has a color chart of typical colors and inlays, as well as construction details showing paneling erection.

SCUPPERS—A new 4-page bulletin, A.I.A. File No. 14-P-6, has been issued by H. W. Covert Co., 339 E. 48th St., New York, on hooded, windproof scuppers for industrial buildings. Installation details, together with National Board of Fire Underwriters' regulations, and specifications, are included.

SKYLIGHT HANDBOOK—The scientific application of modern skylight construction in developing more daylight and ventilation in buildings is described in a manual (A.I.A. File No. 12-J-1) available from American 3 Way-Luxfer Prism Co., 2139 W. Fulton St., Chicago. A series of 11 x 15 sheets are folded into the manual, give cross section details on various American skylights.

COLOR HARMONIZER—Designed to aid in the selection of exact colors, patterns, and combinations for Nu-Wood interiors is the Nu-Wood Color Harmonizer booklet, from Wood Conversion Co., St. Paul, Minn. A special 6-page center section has actual Nu-Wood interiors illustrated in full color. The pages are cut in such a manner that by interchanging the wall and ceiling sections, 54 different interior treatments are possible. This gives the prospective user a picture of what the completed job will look like.

Also available: Case Study Nos. 4 and 5 on the firm's Sta-Lite insulated surfacing material used for interior decoration in a food store and automobile show room respectively.

swords AND plowshares...

. . . guns *and* bread! Whatever the job, whether for war or peace, Arkwright tracing cloths need make no compromise with quality. Years of testing in Arkwright laboratories . . . years of insistence on highest quality materials and highest standards of manufacture have prepared Arkwright for any national emergency. Today, you can order Arkwright tracing cloths with the same confidence in quality . . . the same assurance of rapid delivery that has given Arkwright its recognized position as America's leading manufacturer of tracing cloth for over twenty years! Arkwright Finishing Company, Providence, Rhode Island.

Arkwright TRACING CLOTHS

YOU BUILD MORE DURABLE, MORE BEAUTIFUL SCHOOLS *when you use Douglas Fir Plywood in them*

● A & M Consolidated School, College Station, Texas. All interior walls and partitions are sturdy, puncture-proof Douglas Fir Plywood. C. J. Finney, Ernest Langford, architects. Smith Building Co., general contractor.

● The walls of this high school gym in El Monte, Calif., will take punishment galore because they're Plypanel-grade Douglas Fir Plywood. Marsh, Smith & Powell, architects. Plywood often forms temporary gym floors.

● The trim walls and booths in the photographic laboratory of the Art Center School, Los Angeles, are built of Douglas Fir Plywood. Where there is considerable moisture, the Exterior type should be specified.

● The smooth, flawless walls of architectural concrete formed against Plyform add greatly to the beauty of this elementary school in Tupelo, Miss. Designed by Overstreet & Town; built by W.P.A.

There is a proper type or grade for:

INTERIOR WALLS, CEILINGS
CASES AND BUILT-INS
CONCRETE FORMS
EXTERIOR FINISH
SHEATHING, SUB-FLOORING

● Douglas Fir Plywood is being used in increasing amounts in modern school construction because its versatility intrigues the designer . . . because its low-cost performance and durability please the taxpayer.

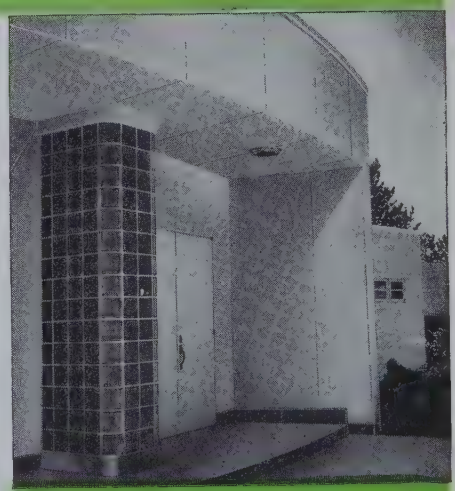
The Plypanel and Plywall grades build interior walls and partitions that are kick-proof and sound absorbent. They provide excellent insulation . . . are receptive to more finishes than any other wall material.

The concrete form grade, Plyform, produces smooth, finless concrete surfaces that require a minimum of finishing. Plyform serves as sheathing and lining combined . . . gives numerous re-uses when handled with reasonable care.

The Exterior type opens a new field of design possibilities. Because this type of Douglas Fir Plywood can be boiled without delaminating, because it comes in large panel sizes and because of its easy workability, it is being specified extensively for exterior finish in every climate.

The Plyscord grade is unsurpassed for wall and roof sheathing, subflooring, one-use concrete forms and other utility jobs. The big panels reduce labor costs . . . add greatly to the rigidity of walls, making them more resistant to earthquakes and high winds.

If you aren't acquainted with all the advantages of Douglas Fir Plywood in school construction, consult Sweet's Catalog or write for free literature and test data. Douglas Fir Plywood Association, Tacoma, Wn.



● The smart, streamlined exterior of the Penthouse Theatre at the University of Washington, Seattle, is water and weather-proof Exterior-type Douglas Fir Plywood. Note the pleasing curved surface formed by panels.

GENUINE DOUGLAS FIR PLYFORM Concrete Form Panel D.F.P.A. INSPECTED

GENUINE PLYWALL Douglas Fir Plywood WALLBOARD D.F.P.A. INSPECTED

SPECIFY DOUGLAS FIR PLYWOOD BY THESE "GRADE TRADE-MARKS"

PLYPANEL D.F.P.A. TRADE MARK REG. U.S. PAT. OFF.

EXT.-D.F.P.A. TRADE MARK REG. U.S. PAT. OFF.

GENUINE PLYSCORD SHEATHING D.F.P.A. INSPECTED

DOUGLAS FIR PLYWOOD
Real Lumber
MADE LARGER, LIGHTER
SPLIT-PROOF
STRONGER

(Continued from page 48)
lack of imagination but because back in the days of bustles and high, button boots someone fixed a six percent minimum for professional services and it stayed fixed.

Most architects figure a 2 per cent profit out of a variable gross, and they are certainly entitled to it. The six percent total for full services was gauged to meet that net and cover production costs as of Spanish War days. Meanwhile the business of existing has gotten vastly more expensive, and with no increase to speak of in the sum allocated for production costs your professional cannot pay ordinary craftsman's wages and make a profit, too. It all gets far worse when he accepts commissions at lower than six percent, and we all know the answer—home offices and jobs with encroachers. And we all know the cure—a solid front for all architects and draftsmen.

Says the League, in effect, "Why not bring this schedule up to date? When old Atropos snips the hawser to some great architect's floating kidney, a slogger steps from the ranks to fill the gap. And until the sweet sorrow of that day should not the understrapper receive wages equal to those of other craftsmen in the building industry?"

Recently a Grade A draftsman in an engineering office was approached by a new man holding an architect's scale. "How do you use this thing?", he asked. Said another (re:drafting), "I usually catch on to things pretty quick, but this seems hard to grasp."

Mike Bonish reveals that his fresh air trainer, that indefatigable fisherman *Alec Shisko,* rowed out one sunny morning with three fish for bait, and rowed in at sundown with one measly piscatorial trophy.

LEON KEACH

PLASTICS AWARD

Major awards for extraordinary architectural achievements with plastics were made in the recent sixth annual Modern Plastics Competition, sponsored by Modern Plastics magazine, New York. Top awards in the Architectural Classification were given Pierce Laboratory, Inc., Summit, N. J., for the Pierceway residential and industrial type surface wiring system, using plastic as its basic material; screens, display cases, and counters in the Coty Salon, New York, designed by Dorothy Draper and executed in Plasdecor by Alice Donaldson; Co-operative Displays, Inc., Cincinnati, Ohio, for its Lumitile, a plastic tile; and Russel & Erwin Mfg. Co., New Britain, Conn., for its use of Lucite as a decorative accessory on entrance bars for doors in the home, office, and large buildings.

In addition, the firm of *Thalheimer & Weitz,* Philadelphia architects, won an honorable mention for General Baking Co. in the Display Classification, for their design of a giant loaf of bread used as a sign over the baking company's plant.

PLANNING DEGREE OFFERED BY CORNELL

As a result of a successful six-year experiment in offering courses in city and regional planning as a field of undergraduate study, the Graduate School at Cornell University, Ithaca, New York, has announced that, beginning this fall, graduate students may elect to major in this field for the degree of Master in Regional Planning.

The work is under the administration of *Professor George H. Sabine,* Dean of the Graduate School. *Gilmore D. Clarke,* Professor of Region Planning and Dean of the College of Architecture, and *Thomas W. Mackesey,* Assistant Professor of Regional Planning, are in charge of planning instruction.

FLORIDA CONVENTION

The annual convention of Florida architects, held December 5-7 at the Brazilian Court Hotel, Palm Beach, Fla., was sponsored by District 10 of the Florida Association of Architects. Business meetings, as well as the exhibit of members' work and building materials, were held at the Norton Gallery and the School of Art.

DEFENSE HOUSING

A cooperative housing plan for defense, designed to provide homes at moderate cost for families with incomes between $1,200 and $1,800, was announced recently by *Charles F. Palmer,* Coordinator of Defense Housing. Under the plan, groups of workers may organize cooperatives and apply to the FHA for mortgage insurance under Defense Housing Title VI.

Cooperatives will employ their own architects to select sites and prepare plans. Although built in groups for the sake of economy and for good community planning, only individual homes are contemplated under this plan. No multiple-unit housing is included.

Information concerning methods of financing, organization, and operation of the cooperative may be had from the Coordinator's office which has prepared a description of the plan for the guidance of interested groups.

SAN FRANCISCO PLAN

A detailed plan to house 374,000 men, women, and children in San Francisco in event of fire, bombardment, or earthquake has been submitted to *F. H. LaGuardia,* Director of Civilian Defense. The plan, prepared by executives of the city's Red Cross Disaster Relief Commission, Shelter Division, and members of the San Francisco Society of Architects, was drawn up in two parts.

The first part contained a survey of schools, hotels, apartment houses, and garages which could accommodate 374,000 persons immediately folowing a disaster; second, especially-planned relief shelter camps, built for 1,000 persons each, to provide housing for those whose homes had been destroyed.

The plan was drawn up with the assistance of the following architects: *W. Clement Ambrose, Norman K. Blanchard, Samuel L. Byman, Irving F. Morrow, William H. Rowe, J. Francis Ward,* and *Harold H. Weeks.*

Meals for the disaster-stricken populace would be prepared at a central depot, then trucked to the schools and other housing centers. Relief shelter camps planned by the architects for prolonged emergency would be divided into two, four, and six person family units, with separate accommodations for single men. Constructed either in the city's parks, or in close-by rural areas, the camps would have heated dormitories, mess hall and kitchens, toilet and shower facilities, other necessary equipment.

ARCHITECTS AND CIVILIAN DEFENSE

A nationwide campaign to make the services of trained technicians available to civilian defense committees in every major city has been recommended to the American Institute of Architects by *Ben Nash,* of the American Designers Institute. The program would be undertaken jointly by the two Institutes. Architects and designers should integrate themselves more

(Continued on page 58)

FOR DEFENSE ... *underfoot*

● Sloane-Blabon Linoleums are serving defense demands in installations through the country, from the small floors of apartment kitchens and nurseries to the vast floor areas of new Government buildings, veterans' hospitals and even our most modern "ships of the line."

● Such installations require a linoleum that will give *all-out* protection.

● It must "armor-plate" floor surfaces of naval vessels against the toughest kind of wear and abuse—stand up under the most severe weather conditions, wind, rain or snow, freezing temperatures or blistering heat.

● It must protect the aged and infirm inmates of hospitals and government institutions from noise—be quiet, resilient and economically maintained.

Sloane-Blabon Linoleum

● In residential installations in defense areas it must be resistant to kitchen stains, grease and grime, stand up under the wear and tear of hard playing youngsters in the nursery, and, to safeguard health, be easy to keep clean.

● Sloane-Blabon Linoleums are today meeting these exacting specifications in thousands of installations throughout our defense areas.

Sloane-Blabon Corporation
295 Fifth Ave., New York, N. Y.

A National Organization with Distributors Everywhere

Moisture Problem Solved!

"Quilt" insulated house, Montgomery County, Maryland. Architects: Francis Palms, Jr., and Lewis E. Stevens, Washington, D. C.

The Problem of harmful moisture condensation in the walls of insulated houses is solved by the use of Cabot's "Quilt". Air space on each side of the "Quilt" permits air circulation, which prevents accumulation of excessive moisture. Cabot's "Quilt" is rot-proof, vermin-proof, stays permanently in place and does not settle. Write for free booklet, ***Build Warm Houses.*** Samuel Cabot, Inc., 1296 Oliver Building, Boston, Mass.

"Quilt" insulated house, Chestnut Hill, Mass. Architect: Miss Eleanor Raymond, Boston.

Cabot's "Quilt"

The Time Tested Insulation

(Continued from page 56)

actively into the civilian defense efforts of their communities, urged Mr. Nash.

"The background of training and experience of the architect and the designer are particularly fitted to move into this, the biggest and most vital task affecting the way of living in America," said Mr. Nash. "There is a definite need for architects and designers in solving the newly-arising problems of civilian health, safety, and economics through proper planning and creative ingenuity," he said.

CONSTRUCTION INDUSTRY IN DEFENSE

A series of advertisements in the SATURDAY EVENING POST, designed to help inform the public of the indispensable part America's basic industries are playing in the defense program, has been begun by Johns-Manville Corp., 22 E. 40th St., New York. Each advertisement since last May has been in the form of an article by a well-known writer; the only reference to Johns-Manville is a brief sponsorship note.

Sixth in the series of advertisements, scheduled for the December 13 issue, is an article by Frazier Hunt entitled, "The Miracle of Defense Construction," which recounts the amazing achievements of the construction industry in the preparedness program.

T-SQUARE CLUB MEETS

Members of the T-Square Club of Philadelphia listened to several discussions on glass at their recent meeting. The commercial field for glass was discussed by *Robert G. Watson,* while Messrs. *Kellogg* and *Cochran,* of Pittsburgh - Corning Corp., presented the story of the glass industry. Sketches and cartoons for stained glass were displayed by *D'Ascenzo Studios* and *Henry Lee Willet Studios.*

Duncan Miles Terry also discussed the many treatments and varied techniques he employs in using glass as a decorative medium.

LOUIS SIMON RETIRES

Louis A. Simon, Supervising Architect of the Public Buildings Administration of the Federal Works Agency, has retired from the government service as of December 1, after having served forty-five years in the Supervising Architect's office. He entered the office in 1896, became head of the architectural division in 1905. When the Supervising Architect's office was transferred in 1934 to the Procurement Division of the Treasury, Simon was appointed Supervising Architect. The Supervising Architect's office and collateral units of the Procurement Division were shifted in 1936 to the Federal Works Agency. The PBA is one of five agencies under the FWA.

In recognition of his services to architecture, Mr. Simon was awarded the gold medal of the Association of Federal Architects in 1937, and in the same year was made a Fellow of the American Institute of Architects.

F.S.A. DESIGNERS

The presentation on pages 709-720 of the November issue of PENCIL POINTS of the work of the designers of the Farm Security Administration communities, omitted mention of some of the personnel responsible for the work shown. Credit should be given to the personnel of District Six, San Francisco, comprising the following:

Herbert P. Hallsteen, District Engineer; *Architects* Burton Cairns (who died in 1939), Vernon DeMars, Lucien Stark, William Edie, Arthur Steiner, Howard Sweeting, Frank Thompson, and Robert Williams; *Landscape Architects* Garrett Eckbo and Milton Butts; *Engineers* Nicholas Cirino, Scott Beamer, John Clark, Allen Crenshaw, George Davis, Harry Donaldson, Eion McKay, William Pirrone, John Raymond, and Winsor Wilkinson.

The organization is under the direction of John F. Donovan, *Chief Engineer,* and Leo F. Stock, Jr., *Assistant Chief Engineer,* Washington, D. C.

YELLIN EXHIBIT

During the month of December, the main gallery at the Architectural League of New York will be devoted to a Memorial Exhibition of the metal work of the late *Samuel Yellin,* who has been credited with the revival of good metalwork design and craftsmanship in America. Examples of his work may be found on a number of important buildings erected during the past thirty years.

CHRISTMAS CARD EXHIBIT

The Museum of the City of New York, Fifth Ave. between 103rd and 104th St., New York, has opened a special exhibition entitled, "The Same Old Wish." The exhibition, which will remain current until January 2, consists of about 200 Christmas cards tracing the development of the Christmas card from 1870 to the present day.

Westinghouse *Electricana*

Brief items to illustrate the utility of Westinghouse electrical equipment in a variety of applications, which may suggest ideas of value in your building projects.

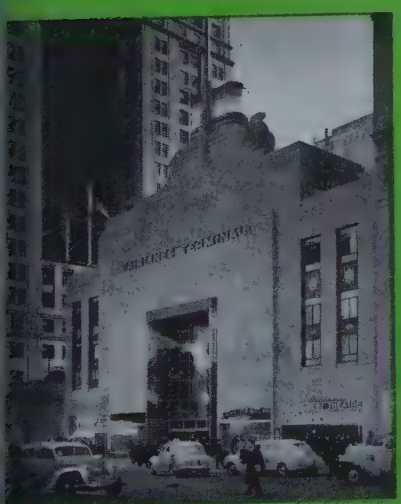
★ The examples shown in the "Electricana" below are but a few from the thousands of Westinghouse products available for the building industry. Specification details on many of them may be found in Sweet's Catalog. For more complete information, and for quick, dependable help on your electrical needs, call your nearest Westinghouse office.

WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY
EAST PITTSBURGH, PA.

ELECTRICAL EQUIPMENT with space-saving characteristics matches the modern design of this educational building. Elevators, lighting, panelboards and switchboards furnished by Westinghouse. *Cathedral of Learning, University of Pittsburgh, Pittsburgh, Pa.*

AIR CONDITIONING, silenced by ingenious sound traps and acoustical duct linings, provides the temperature and accurate humidity control required for comfort in these broadcasting studios. Equipment by Westinghouse. *NBC Building, Los Angeles, Cal.*

LIGHTING for cashiers' windows is ample at the swank new *Turf Club, Albany, Cal.* Westinghouse Fluorescent lighting equipment also provides soft, even, glare-free light in clubhouse, lounges, dining rooms and promenades.



ELECTRICAL STAIRWAYS, with capacities of 6,000 passengers per hour, give swift smooth passage in this Air Terminal, from basement to lobby and from lobby to terminal floor. Westinghouse elevators also serve other parts of the *Airlines Terminal, New York.*

WATER COOLERS by Westinghouse serve defense workers in this new clothing plant, engaged in army uniform contracts. Hermetically-sealed refrigeration units with 5-year protection plan provide dependable water cooling at lowest maintenance cost, for every industrial and commercial need. *Haggar Company, Dallas, Texas.*

Westinghouse

OBITUARIES

RALPH H. DOANE

Ralph Harrington Doane, special instructor at Massachusetts Institute of Technology, and the architect who designed the Motor Mart and the Rindge Technical High School in Boston, died November 6, aged fifty-five. He had served as consulting architect for the Philippine Government from 1916-1918, supervised construction there of more than 100 buildings.

For the design of the Motor Mart he received the *Harleston Parker Gold Medal* in 1927 for the "best architectural work in metropolitan Boston." In 1930 he won three prizes awarded by THE BOSTON HERALD for architecture in New England.

DWIGHT HEALD PERKINS

Dwight Heald Perkins, architect and park planner of Evanston, Ill., died on November 2, aged seventy-four. One of the nation's foremost educational architects, he has left more than 200 school, park, and public buildings as a testimonial to a lifetime devoted to planning broader educational and recreational resources for the people of the Chicago area.

POSITIONS WANTED

REGISTERED ARCHITECT—30 years old, registered in Pennsylvania since 1937, seeks connection elsewhere due to present condition of private building. Henry S. Berg, 6701 N. Broad St., Philadelphia.

DRAFTSMEN WANTED

DRAFTSMAN WANTED: Young man living in New York metropolitan area, who can make accurate ink drawings for publication. Man should have had some experience and a junior draftsman's knowledge of construction. Ability in design is of no value. Salary $30. Give complete particulars in first reply. Include photograph. Box 103, PENCIL POINTS.

ARCHITECTURAL DRAFTSMAN wanted by leading interior decorator. Must be experienced in interior designing and in traditional ornament. State age, experience, and salary desired. Box 101, PENCIL POINTS.

DRAFTSMAN WANTED for temporary work on a school design. Must be familiar with modern school construction and capable of designing reinforced columns, beams, and floors. Job will last only a month or two. Lodging can be furnished if necessary. Send experience record. State salary expected weekly. Address, Box 104, PENCIL POINTS.

MECHANICAL DRAFTSMAN. Young, recent graduate wanted by responsible elevator manufacturer. Must be rapid, dependable, and able to produce excellent work. Good salary and real future for right man. Give all details in reply. Box 102, PENCIL POINTS.

City of Janesville
Wisconsin
September 11, 1941
Barber-Colman Company
Rockford, Illinois
Gentlemen:
Sometime before the heating season sets under way we would like to have one of your field men check over the controls in our building.
We have no specific trouble to report; in fact, our repair expenses on your controls have been negligible for the past eleven years.
Please have your man come in to see me before he makes his inspection.
Very truly yours,
Henry Traxler
City Manager
WHAT WE MEAN BY
"MINIMUM MAINTENANCE"...
repair expenses on your controls have been negligible for the past eleven years.
The Janesville City Hall, Janesville, Wisconsin, is a fair sample of how Barber-Colman Electric Controls require little, if any, upkeep expense. This building has individual room control — a fairly elaborate installation — yet, as Mr. Traxler's letter states, the outlay for repairs has been "negligible" in the eleven years since the system was put in. Barber-Colman Electric Controls are designed and built to give a lifetime of accurate and reliable service with MINIMUM MAINTENANCE cost. This is an important factor that deserves thorough consideration when purchasing a control system.
SPECIFY!
BARBER B-C COLMAN
ELECTRIC CONTROLS BY BARBER-COLMAN
1230 ROCK ST. BARBER-COLMAN COMPANY ROCKFORD, ILL.

VENUS *Drawing* PENCILS

VENUS DRAWING Pencils are made in 17 degrees, 6B softest to 9H hardest, and VENUS TRACING Pencils—for direct tracing and blue print work—in 3 degrees, T1, T2 and T3.

We shall be glad to send you samples in any degree you wish.

AMERICAN PENCIL COMPANY
502 Willow Avenue
HOBOKEN, N. J.

Venus Pencil Company, Ltd., Toronto
Venus Pencil Company, Ltd., London

A. The reflections in the water are indicated with both vertical and horizontal broad pencil strokes, using a Venus 2B for the lighter values and Venus 4B for the darker ones. Note that these strokes should cross each other as little as possible.

B. The foliage in the upper right foreground was drawn with strong, quick strokes with a Venus 6B, almost consistently in one direction, indicating the sweep of the foliage and leading the eye towards the point of interest (the house).

COMPETITION ANNOUNCEMENTS AND RESULTS

HAMLIN PRIZE

The Hamlin Prize, highest award bestowed by the Columbia University School of Architecture for a decorative design, has been won for 1941-42 by Paul Pippin, a fourth-year student, for the best rendition of a fountain in a housing development.

The winning design provides for a structure of brick and reinforced concrete which combines as a unit a bus stop, public toilets, and a fountain, planned as a feature of a central plaza surrounded by stores.

For the past three years, Paul Pippin has conducted a column, "Critical Youth Wields the Flail," in PENCIL POINTS.

PLYM FELLOWSHIP

The committee in charge has announced the twenty-ninth competition for the award of the *Francis J. Plym Fellowship in Architecture.* The value of the Fellowship is $1,200, to be used toward defraying the expenses for one year in Europe for study of architecture. Owing to the disturbed conditions in Europe, the winner may not be able to go abroad for study, but may have to confine his travel to the United States.

The competition will be open to all graduates of the Department of Architecture in the curriculum in architecture of the University of Illinois, Urbana, Ill., who are American citizens of good moral character, and who are under thirty years of age on June 1, 1942.

The committee has also announced the nineteenth competition for the award of the *Plym Foreign Fellowship in Architectural Engineering.* The value of the fellowship, the conditions of the competition, are the same as for the Architectural fellowship.

LANGLEY SCHOLARSHIPS

To encourage higher education in architecture, the American Institute of Architects will award the *Edward Langley Scholarships* in 1942 for advanced study, research, and travel, according to *Richmond H. Shreve,* A.I.A. president. Any resident of the United States and Canada, engaged in the profession of architecture, is eligible.

The awards, limited to ten and with $1,500 as the maximum stipend, provide for advanced study, research, and travel.

Proposals of candidates will be received at the national headquarters of the Institute, 1741 New York Ave., Washington, D. C., from January 1 to March 1, 1942.

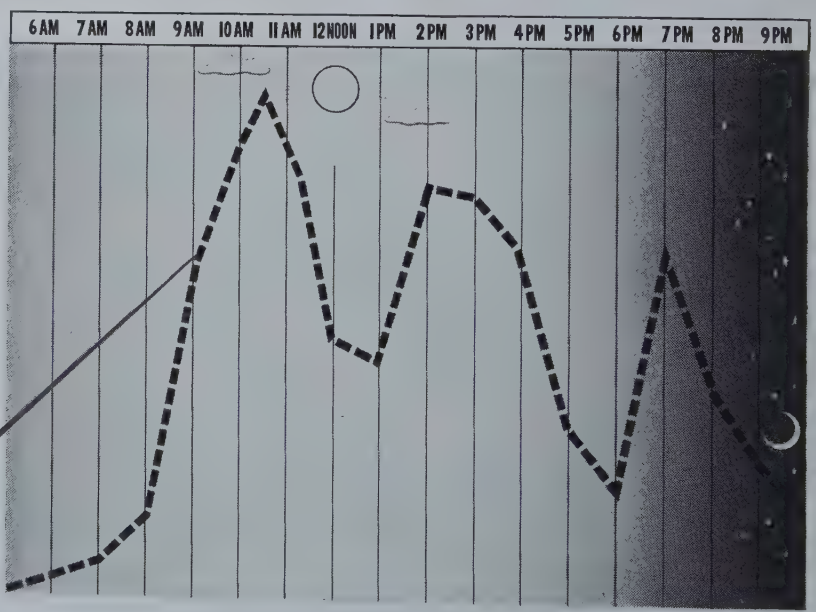
STEEDMAN FELLOWSHIP

The governing committee of the *James Harrison Steedman Memorial Fellowship in Architecture* has announced the sixteenth annual competition for this award. Under normal conditions, the Fellowship offers an award of $1,500 for a year of study and travel in foreign lands.

The Fellowship is open to all graduates of recognized architectural schools, who are between the ages of 21 and 31 at the time of appointment, and who have had at least a year of practical work in the office of a St. Louis architect.

Forms of application for registration can be obtained upon request to the Secretary of the School of Architecture, Washington University, St. Louis, Mo., to whom application blanks must be returned not later than January 31.

What are the best times for your Long Distance calls?



THE chart shows the ebb and flow of Long Distance telephone calls during an average day.

Notice the sharp peaks in mid-morning and mid-afternoon.

That's when the people you want to reach are busiest.

See the third peak at 7 P. M.

That's when other people are most likely to be telephoning, too.

If you avoid these three peak periods, you'll get better service and find folks more free to talk.

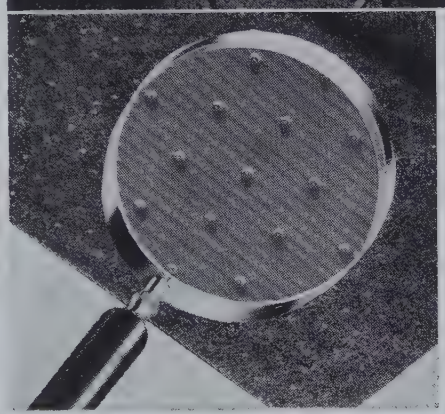
It's a simple suggestion — but worth remembering these days when defense puts such a load on telephone facilities.

Long Distance
helps unite the nation

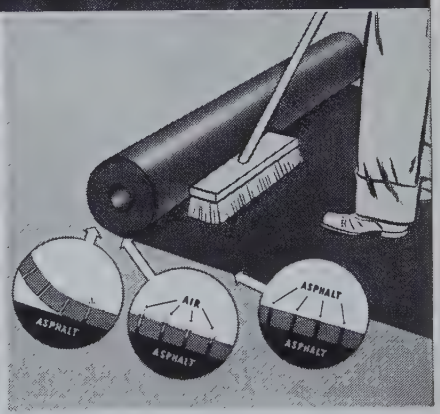
"THE TELEPHONE HOUR" is broadcast every Monday evening over the N.B.C. Red Network.

HOW CAN HOLES IMPROVE A ROOF?

THAT'S EASY! JUST LISTEN TO THIS ...



The holes (greatly magnified above) in the new Johns-Manville Perforated Asbestos Felts are the result of years of research, experience and testing. As the felts are laid, these countless tiny perforations act as . . .



. . . "check valves," permitting trapped air to escape. They are then sealed by the waterproofing asphalt. Thus, blistering is virtually eliminated. Application is faster, too, and the felts adhere tighter.

Fire protection is also provided. As shown above, J-M Felts remain undamaged under conditions that quickly destroy ordinary felts. Rotproof as well, they assure continued . . .

. . . low maintenance. No periodic re-surfacing is needed to protect against the drying-out action of the sun. For example, the roof above is 27 years old . . . *and still going strong!*

The principle back of the new J-M Perforated Asbestos Felt is the same used so successfully by expert waterproofers who employ an open-weave fabric in connection with membrane waterproofing jobs.

If you aren't familiar with the many advantages of this important new J-M advance in roofing, write for details. At the same time, ask for specification data on the many styles and types of J-M Built-up Roofs. Johns-Manville, 22 East 40th Street, New York, N. Y.

JM JOHNS-MANVILLE PRODUCTS

JOHNS-MANVILLE
Smooth-Surfaced
ASBESTOS BUILT-UP ROOFS

THE ROOF WITH THE SAFETY FACTOR

HOLOPHANE HIBAY REFLECTOR (500-1500 WATTS)

NEW
Built for Today

READY
No Critical Materials

RIGHT
for Efficiency Permanence, Safety

Today, Planned Lighting does its part in the fight for greater speed. With eyes working harder, working longer and under nervous tension, this new Holophane Unit is a timely aid to defense. It accelerates production schedules and reduces costly errors.

The Holophane Hibay Unit No. 990, illustrated here, is one of four new reflectors each with a different light distribution for uniform results under varying mounting conditions. The fact that these reflectors were designed and produced within the restrictions of the emergency is a tribute to Holophane research and engineering skill.

STUDY THESE ADVANTAGES:

1. Uses no critical defense materials
2. Standard Holophane construction . . . sturdy as a Cranelite
3. Traditional Holophane efficiency, permanence, safety
4. No wattage limitations—maximum 1500 watt Incandescent or 400 watt Mercury
5. Common-sense high bay light distribution for high mounting

LOWER COST—FASTER SHIPMENT

INVESTIGATE *how conservation of materials, of power and of men can be advanced in* your *plant by the installation of new Holophane Hibay Reflectors. Write for details. No obligation.*

Holophane
COMPANY, INC.
Lighting Authorities—Since 1898
342 MADISON AVE.
NEW YORK CITY
THE HOLOPHANE CO. LTD.
285 Yonge St., Toronto, Canada

MANUFACTURERS' DATA WANTED

RALPH C. WYATT, *Chief Engineer,* Engineering & Construction Division, Department of Finance, Commonwealth of Kentucky, Frankfort, Ky. (Data for complete A.I.A. file, data for drafting room, samples, data for building construction.)

A. A. HORWITH, *Chief Mechanical Engineering Draftsman,* Construction Engineering Department, N.A.C.A., Langley Field, Virginia. (Data for complete A.I.A. file, and Data Sheets for drafting room use.)

REV. GILBERT WINKELMANN, A.I.A., Department of Architecture, St. John's University, Collegeville, Minn. (Samples for building materials exhibit.)

THE MART

ARTHUR I. MacDONALD, *Architect,* Stony Hill Road, R.F.D. No. 1, Springfield, Mass., is disposing of his architectural library, has a number of books for sale. Included in his collection is a complete file of the White Pine Series of Architectural Monographs.

CARL C. WOLSDORF, 5177 Ralph Ave., Cincinnati, Ohio, has the following copies of PENCIL POINTS for sale: 1937—June, November, December; 1938—January to December; 1939—January to August.

PERSONALS

WILLIAM T. HERZOG, *Architect,* has moved his office from 238 S. Maple Ave. to 715 Ontario St., Oak Park, Ill.

ARTHUR DEIMEL, *Architect,* formerly of the firm of Scholfield & Deimel, New London, Conn., has opened his own office in the Mercer Building, that city.

PAUL ROBINSON HUNTER and WALTER REICHARDT have announced the dissolution of the firm of *Hunter & Reichardt,* Architects. They will continue the practice of architecture independently, sharing offices at 1103 Architects Building, Los Angeles, Calif.

HALLOWELL

STEEL Posture Back STOOL

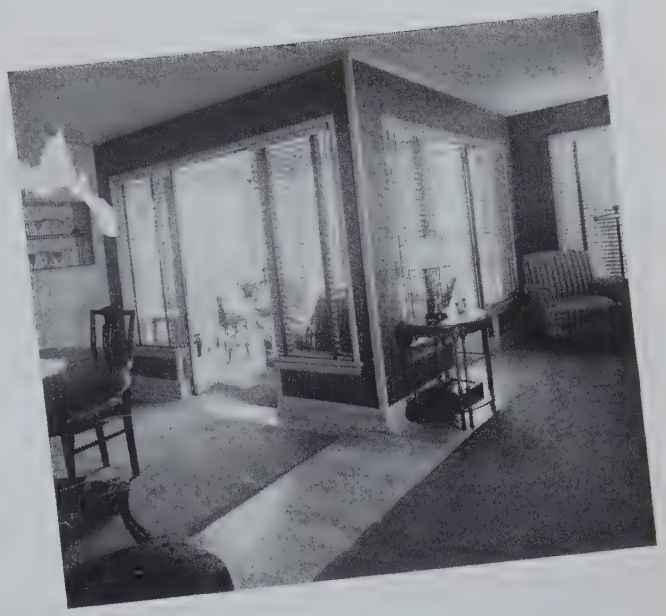
Fig. 1266
Pat. applied for

IT'S been thoroughly proved that proper seating facilities for draftsmen result in improved work and more of it.

That's why so many drawing rooms are equipped with the "HALLOWELL" stool shown above. It's been designed by draftsmen for draftsmen; provides work-producing comfort at the board.

The "Hallowell" permits full freedom of movement plus a high degree of comfort insured by the spring Posture Back which gives to the slightest pressure, yet always provides real support. Full welded steel construction means permanent rigidity not found in ordinary riveted stools. And prices are right, too. Investigate "Hallowell" Steel Stools . . . seat yourself—!

STANDARD PRESSED STEEL CO.
JENKINTOWN, PENNA. Box 588
BOSTON · DETROIT · INDIANAPOLIS · CHICAGO · ST. LOUIS · SAN FRANCISCO



ADD THIS BEAUTY TO MODERN HOMES

● Give homes daylight, sunshine and cheer—and underfoot, the *floors of tomorrow* . . . satin-smooth, richly beautiful Maple.

● This modern flooring captures sunlight. Its lighter color emphasizes its bright cleanliness. Its fine, quiet grain is in close harmony with present-day, close-grained furniture, bringing all-over room beauty beyond the reach of gaudy floors. Maple brushes clean, and is easily refinished to fit any change in decorative scheme.

● Today Hard Maple costs no more—and *gives* infinitely more—in beauty, in service, in living satisfaction. When you build or remodel, give your home a modern floor of Maple. Write for free Home Builder's folder with color illustrations of various patterns.

MAPLE FLOORING MANUFACTURERS ASSOCIATION
1785 McCormick Building, Chicago, Illinois

NOTE TO DECORATORS—Maple fits any decorative scheme—comes in various sizes and grades, in strips or blocks to form many fascinating patterns, and may be finished in a wide range of colors besides "Natural." Write for Home Builder's folder containing sample reproductions.

Floor *with*
MFMA Maple
REG. U. S. PAT. OFF.
(NORTHERN HARD)

SPEED, ECONOMY, AVAILABILITY

AS IN EVERY EMERGENCY engineers and designers today are turning to lumber for the construction of buildings of all kinds; for defense and for civilian needs.

There is no shortage of lumber; it is reasonable in cost; it may be fabricated quickly; it may be obtained readily in all parts of the country **without priority orders.**

To help you design and build with **Douglas fir lumber** the Engineering Department of the West Coast Lumbermen's Association has prepared the second in its **Blue Ox Series** of specimen plans—"Flat Top Roof Trusses." Included in this 20-page bulletin are specimen designs . . . and bills of material for spans of 40, 60, 80 and 100 feet. Determining design factors are discussed and suggested framing and bracing details are given—also sample analysis of timber connector joints.

Write for your **Free Copy** of this aid in designing and estimating modern timber trusses —TODAY.

WRITE FOR FREE BOOKLET

WEST COAST LUMBERMEN'S ASSOCIATION

364 STUART BUILDING SEATTLE, WASHINGTON

Specify PLASTI-GLAZE

Plasti-Glaze is the glazing compound to specify and use on low maintenance buildings or where the government requests NO Maintenance for 25 years.

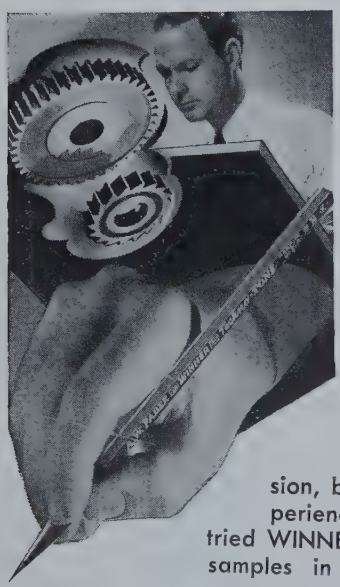
THE MOST MODERN PRODUCT FOR GLAZING BOTH STEEL AND WOOD SASH.

PLASTI-GLAZE—the long-life glazing compound —contains more oil (and it's heavier-bodied oil!) than you'll find in any putty. The new Chrysler Tank Plant and Hudson Gun Arsenal are among the many large buildings glazed with Plasti-Glaze. It glazes with ease—is moderate in cost—can be painted immediately, remains permanently plastic.

By specifying this satisfactory product, your glazing problems will be forever ended. PLASTI-GLAZE is guaranteed by America's largest producers of glazing products. Write for complete information.

Factories in DETROIT—CHICAGO JERSEY CITY — **PLASTIC PRODUCTS COMPANY** — In the South PLASTOID PRODUCTS CO. NEW ORLEANS

GENERAL OFFICE 6481 GEORGIA AVENUE • DETROIT, MICHIGAN



Design for COMBAT

Thousands of men in drafting rooms design for Defense such things as gears, valves, bearings, ship ways . . .

Note how many of them use A. W. Faber's WINNER Techno-TONE drawing pencil — the smooth, grit-free marvel of graphite precision, backed by 180 years experience. If you have not yet tried WINNER Techno-TONE, send for samples in your favorite degrees.

WINNER *Techno*-**TONE**
DRAWING PENCIL
translates **GRAY MATTER** *into* **BLACK MATTER**

WINNER *Techno* TONE
17 Degrees—6B to 9H
"It has the A. W. FABER name on it."

Made in U.S.A. Polished rich green. Packed in metal box. **2 for 25¢**

A·W·FABER·*Inc* NEWARK N.J.

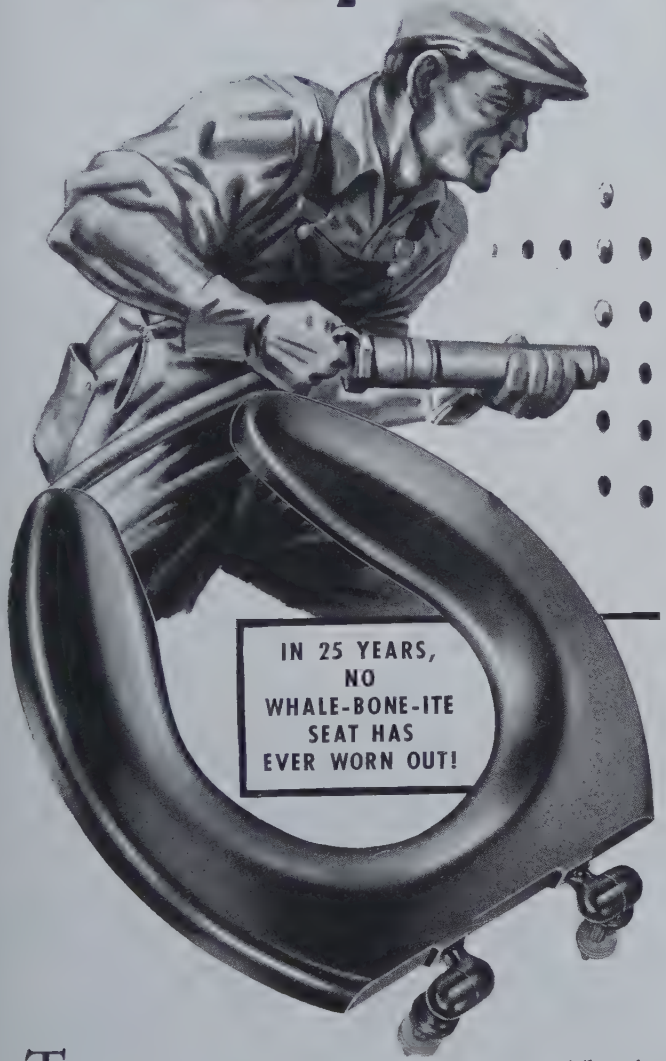
TRY *Columbia* TRACING CLOTH

HERE is the latest innovation in TRACING CLOTH containing all of the fine qualities which the most expert draftsman desires. Tested and proven in quality for surface efficiency. Makes clean sharp blueprints. Cleans easily. Corrections of ink or pencil made easily, but the superiority of this NEW Tracing Cloth is best proven by use and you are urged to send for a large working sample sheet.

THE *Columbia* MILLS
INCORPORATED
225 FIFTH AVENUE
NEW YORK, N. Y.

Columbia

He's Not The Kind To Baby Seats



There's a big job ahead for defense workers. There's no time for babying plant equipment that can't stand the "gaff."

Scuffs, slams and bangs don't mean a thing to Whale-Bone-Ite Closet Seats—not to their sealed-in laminated core, molded-in hinges, and tough, thick molded composition hide. Whale-Bone-Ite Seats are moisture-proof; don't warp, and have no surface coating to wear off.

Now—at no extra cost—Whale-Bone-Ite Seats will protect busy defense plants against replacement costs. Yet, long after defense they'll still be on the job.

THE BRUNSWICK-BALKE-COLLENDER CO.
623 South Wabash Avenue, Chicago, Illinois
MAKERS OF FINE CLOSET SEATS FOR EVERY INSTALLATION

Brunswick

WHALE-BONE-ITE CLOSET SEATS

MESKER STEEL SASH gives you at least 35% MORE QUALITY for your money

* *Based on Sworn Facts taken from the 1940 SWEET'S CATALOGUE*

No other Steel Sash gives you *all* these important features!

1. *All weathering members hot-rolled 1/8" angles**
2. *Rust-proof bronze bearing malleable cup-pivots**
3. *Vertex corners on all weathering bars**
4. *One-piece outside glazing section**
5. *Frame corners riveted and welded*
6. *Ventilator corners riveted and welded*
7. *Frame bars a minimum of 1½" in depth*
8. *Ventilator bars a minimum of 1⅝" in depth*
9. *Muntin bars a minimum of 1½" in depth*
10. *Muntin joints interlocked and welded*
11. *Cam lock in addition to push bar*
12. *Minimum ⅝" anchorage in masonry*
13. *Available with wrought iron* sills or all wrought iron*
14. *Available with phosphate rust-proofing*

*MESKER EXCLUSIVES

Free
Ready Reference STEEL SASH MERIT-METER
Proves Mesker's Superiority
☆
. . also the
VISUAL-TEST KIT
helps you SEE, FEEL and KNOW the difference in Steel Sash quality

. . . more than a "lucky accident" these fourteen features are the result of years of painstaking research. They're the fourteen reasons why the value-wise building industry is daily turning more enthusiastically to MESKER.

SINCE 1879
Mesker
BROTHERS
424 SOUTH 7th STREET
ST. LOUIS, MO.

CASEMENT WINDOWS • MONUMENTAL WINDOWS • INDUSTRIAL WINDOWS • INDUSTRIAL DOORS • METAL SCREENS • DETENTION WINDOWS

MESKER BROS. 424 SO. 7th ST., ST. LOUIS, MO.
Without obligation send us ☐ Ready Reference Steel Sash Merit Meter
☐ Visual Test Kit ☐ Fileworthy Literature on Mesker Steel Sash
☐ Illustrated Steel Sash Price Book ☐ Mesker Dealer Plan

Firm Name _____ ☐ ARCHITECT ☐ BUILDER ☐ DEALER

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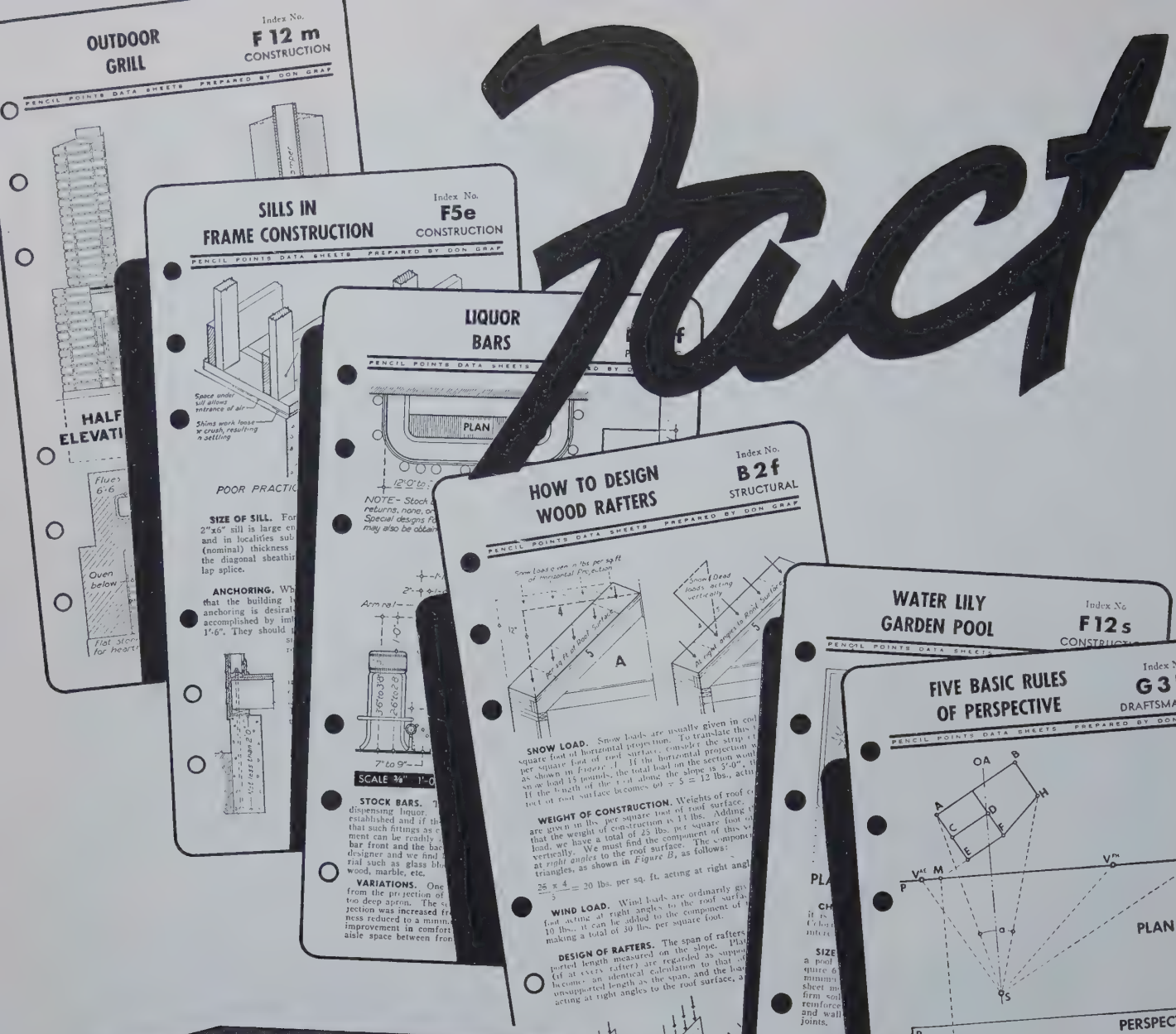

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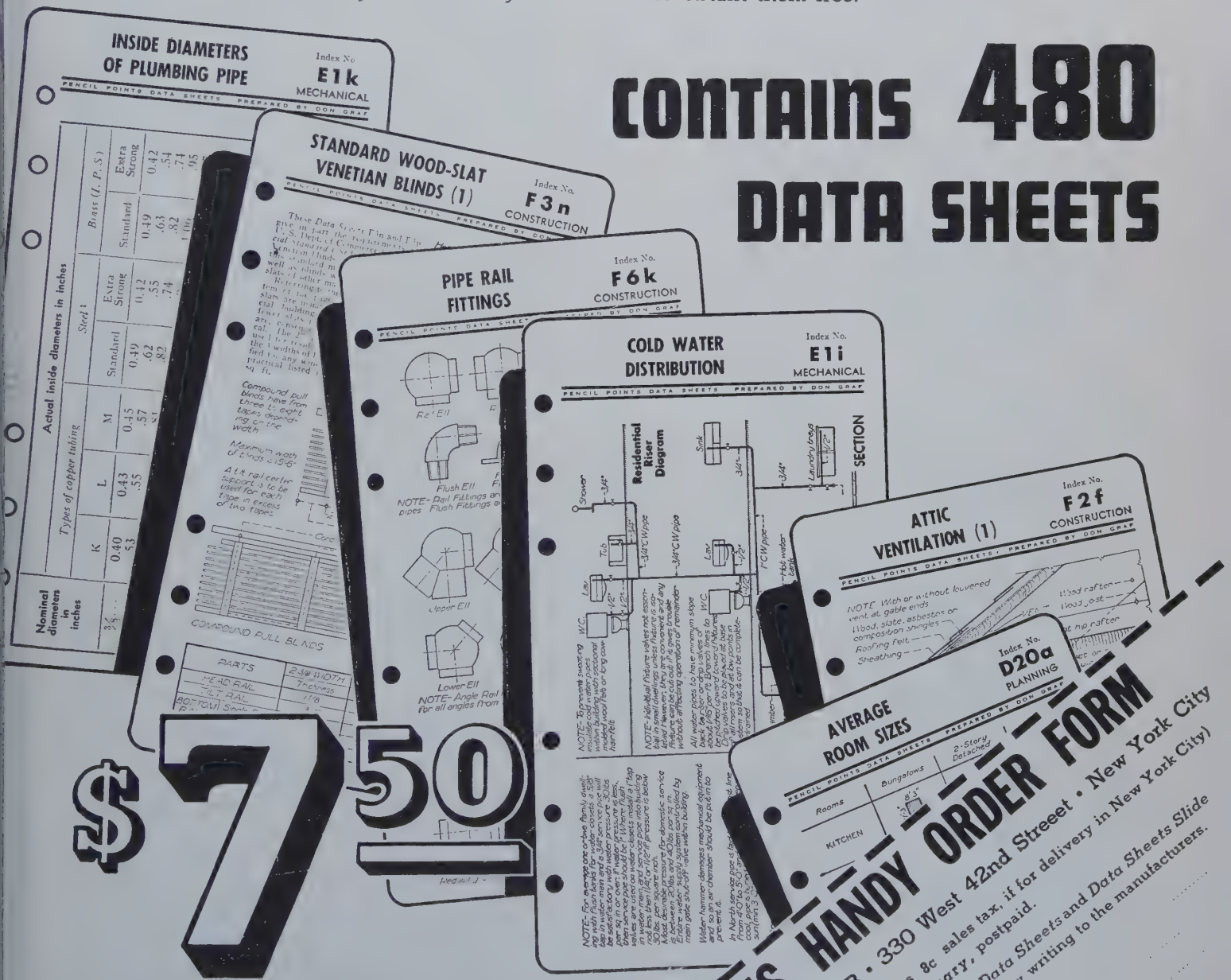

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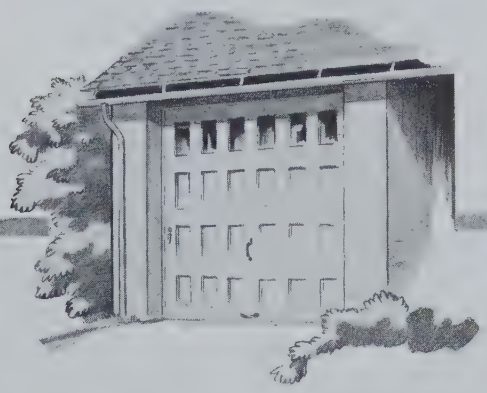
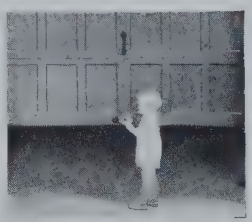
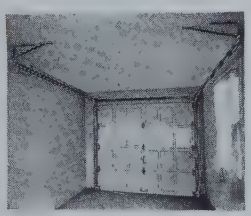


STANLEY "Roll-Up"
The Finest Garage Door Equipment Made!



Stanley "Roll-Up" Doors are supplied complete, both doors and hardware. Whether doors are small or large, action is so smooth and easy a child can open them. Heavy springs do the work, with a slight starting pull.

Since these doors travel straight up, the inside of the garage need be no longer than the car, and they open easily, even when snow-banked.



Stock sizes are 8′ wide by 7′ high, 8′ wide by 7′ 6″ high, and 8′ wide by 8′ high, doors either 1⅜″ or 1¾″ thickness. Also furnished 14′, 15′ or 16′ wide, 1¾″ thick, for two-car openings. Doors can be supplied on order to fit unusual openings.

YOUR GUIDE TO GOOD HARDWARE

Stanley Catalog No. 61, giving full details on the complete Stanley Hardware line, will prove handy in preparing your specifications. Write for your free copy. The Stanley Works, New Britain, Connecticut.

STANLEY

HARDWARE FOR CAREFREE DOORS

NEW PRODUCTS

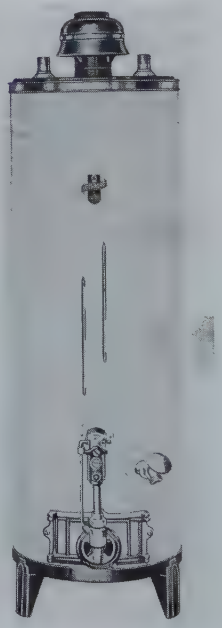
ELECTRIC RANGE STANDARDS

The following approved standards were adopted recently by the National Electrical Manufacturers Association, 155 E. 44th St., New York: Standard 4-24-1941—The dimensions of the clear space in the back of the range to take the plug and cord shall be as follows: height, not less than 8 inches from the floor; width, not less than 8 inches on each side of the center line of the range; depth, not less than 5¾ inches in from the back of the range. The space is provided at the back of the range to permit installing the range against the wall when either a flush-mounted or a surface-mounted receptacle is provided for connecting the range to the supply circuit.

The other standard provides that height of an electric range shall be 36 inches from the floor.

PORCELAIN-ENAMELED WATER HEATER TANK

In view of the scarcity of materials from which galvanized, copper, and other non-ferrous tanks are fabricated, and because of its ability to secure porcelain enameled tanks, the Hotstream Heater Co., 8007 Grand Ave., Cleveland, Ohio, has announced a new Model A automatic storage water heater with porcelain enameled tank.



The new model is an underfired, outside flue, automatic storage water heater, porcelain enameled inside and out. The tank is welded by the Fusion- Welded process. A liner of 1½ inches of Fiberglas is used for insulation, completely surrounds the heater.

The Model A may be had in 15, 20, 30, 40, and 60 gallon capacities for either natural gas or manufactured gas, has an input rating of from 10,000 to 40,000 B.t.u per hour, depending upon capacities.

Other features include combustion separator, air duct, safety pilot, throttling adjustment valve, thermostat. The new heaters are acceptable to FHA, USHA, PBA, and various governmental agencies where non-ferrous tanks have been specified.

MODULATING STEAM CONTROL SYSTEM

An improvement in its No. 40 modulating steam control system for installation on one or two pipe steam heating systems in educational buildings, hospitals, sanitoriums, apartment buildings, etc., has been announced by Major Controls, Inc., Sales Division, 12 Norfolk St., Cambridge, Mass. The model operates in conjunction with the firm's three-point control thermostat which, it claims, consistently maintains inside temperatures within a nar-

row temperature range of plus or minus one degree Fahrenheit.

The manufacturer claims economies by the elimination of excessive pressure on valves and traps in the heating system. The control has no revolving parts to wear out, no parts to oil, and its entire construction is simple, substantial.

RANDOM-TAB SHINGLES

To avoid the monotony of pattern of strip shingles, United States Gypsum Co., 300 W. Adams St., Chi-

cago, has introduced its new USG Random-Tab shingles. In addition to the effect obtained with the irregular lines of these shingles, the four colors in which they are available are enhanced by blended tones on wood-grained textures that accentuate the deep shadow lines. The new shingle is self aligning, self nail-covering, self joint-protecting, and self-randoming, according to the firm. The economy of these heavyweight, four-tab strip shingles is obtained because they may be applied from right to left, or left to right, without any special care in selection of the strips.

WATERPROOFING COMPOUNDS

Four new waterproofing compounds, said to be effective seals for concrete, brick, stone, and other types of masonry, as well as for wood and composition materials, have been announced by Primoid Products Corp., 103 Park Ave., New York. Primoid Standard is a clear, rubber-base liquid which can be either sprayed or brushed on, and penetrates into the material to be waterproofed. It will not crack or peel off, and is not affected by heat or cold.

Dry colors, or colors ground in oil, can readily be mixed with the compound which can also be used as a coating for iron, steel, other metals to prevent corrosion, since it is resistant to oils, acids, other chemicals.

Available in 1, 5, and 10 gallon cans, and 30 and 55 gallon drums. The product has a coverage of 300 to 600 square feet per gallon depending on the porosity of the material being coated.

SPRING BALANCE DEVICE

The Silent-Balance is a combination spring balance and weatherstrip unit which eliminates box frames, sash weights, pulleys and cord, and, where economy in construction is of prime importance, even the window frame, since it provides an air-

Announcement

A SUBSTITUTE for COPPER FLASHING!

CHENEY BLACK FLASHING is a new product identical in shape and form with the original Cheney copper flashing except that it is made of PITCH-ON-METAL instead of copper.

PITCH-ON-METAL, a brand new development, has a ferrous metal core completely enclosed within a heavy baked-on coating of coal-tar pitch enamel. PITCH-ON-METAL has the strength of steel and the flexibility of copper. It is not affected by moisture, lime, or cement mortar and is resistant to most acid conditions.

Our experiments carried on with the government departments at Washington and with the Bureau of Standards definitely convinces us that our new product, CHENEY BLACK FLASHING, will prove a worthy substitute during the emergency.

CHENEY BLACK REGLET is also made of PITCH-ON-METAL and costs of both Black Flashing and Black Reglet are much less than copper.

We are now in production and as soon as possible complete stocks will be available at warehouses of Sheet Metal Distributors throughout the United States.

You can specify CHENEY BLACK FLASHING and CHENEY BLACK REGLET for either defense or non-defense construction as no priorities are necessary.

SPECIFICATION For Private Work

Thru-wall flashing shall be provided below parapet copings, for counterflashing in masonry parapets, where low roofs abut the superstructure, wherever flashing is set between two courses of masonry, and elsewhere as indicated on drawings. Thru-wall flashing shall be placed in the wall with mortar below and on top of flashing, so that a mechanical bond is obtained both vertically and horizontally. All counterflashing shall be bent to shape by the manufacturer. These flashings shall be CHENEY BLACK FLASHINGS and shall be furnished and installed according to the standard specifications of THE CHENEY-COMPANY, Ardmore, Pennsylvania.

After all roofing and sheet metal work is completed this contractor shall paint all exposed thru-wall flashing with one brush coat of coal-tar pitch base paint.

SPECIFICATION For Public Work

Thru-wall flashing shall be provided below parapet copings, for counterflashing in masonry parapets, where low roofs abut the superstructure, wherever flashing is set between two courses of masonry, and elsewhere as indicated on drawings. Thru-wall flashings shall be formed with dovetail or undercut sawtooth corrugation spaced three inches apart and shall be placed in the wall with mortar below and on top of flashing, so that a mechanical bond is obtained both vertically and horizontally. All counterflashing shall be bent to shape by the manufacturer.

These flashings shall be made of 26-gauge sheet iron or steel, and shall be factory coated with a baked on coal-tar pitch enamel compounded to proper viscosity with suitable bituminous solvents. Engler viscosity 100 c.c. at 25 degrees centigrade, 275 to 335 seconds, insoluble in Benzol 8% maximum.

After all roofing and sheet metal work is completed this contractor shall paint all exposed thru-wall flashing with one brush coat of coal-tar pitch paint.

The CHENEY COMPANY

ARDMORE — PENNA.

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AS AN ARCHITECT MY EXPERIENCE OF MANY YEARS IN CHOOSING WOOD FLOOR FINISHES HAS PROVED
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It brings out the natural beauty of the wood and is suitable for paneling, etc.

Select LIGNOPHOL for floors in residences, schools, gymnasiums and factories and you can rest assured that the job will do you credit. Unlike shellac and varnish, LIGNOPHOL leaves nothing to wear off.

See reproduction of various woods in natural colors in Sweet's Catalog, page 17/40.

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Preserves and brings out
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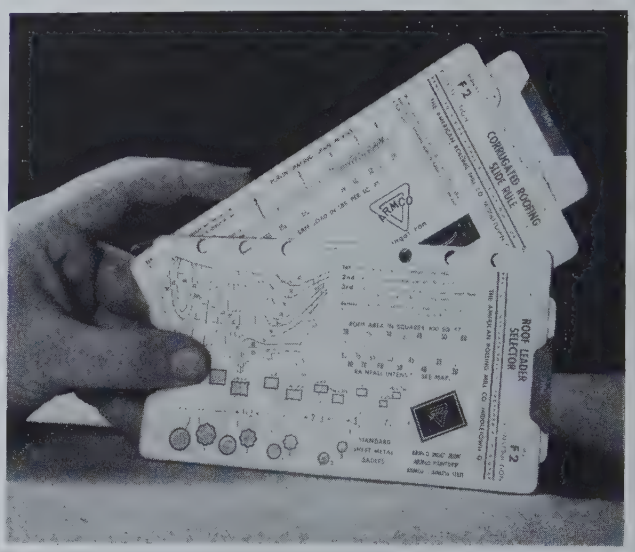
sealed metal run for the sash which may be applied directly to the framing studs, according to Holland Weatherstrip Co., Holland, Mich.

The unit consists of a vibration-absorbing spring (of proper length and tension for standard sash sizes) which reduces noise to a minimum, a metal housing, and side compression members acting as weatherstrips. It can also be furnished in a formed unit with weatherstrip integral.

ROOF LEADER SELECTOR

Developed by Don Graf for American Rolling Mill Co., Department 30, 703 Curtis St., Middle-



town, Ohio, is this corrugated roofing slide rule and roof leader selector. Feature of the rule is that it calculates accurately for local rainfall intensity and not, as it often customary, on an eight-inch rate for all localities.

After finding out the rainfall intensity in the locality where the work is to be done, the user sets the slide so that the number of squares in the roof area appears above the rainfall figure; this gives the number of leaders necessary for an adequate installation.

The other side of the rule aids in the selection of purlin spacing on a corrugated metal roof.

HEATING SYSTEM REGULATOR

A new, low-priced heating system regulator which controls heating in accordance with outside temperature, and which programs heating according to the hours of activity and outside temperature, has been developed by Marsh Tritrol Co., 600 S. Michigan Ave., Chicago. It offers in one compact instrument all the various controls and switches necessary for completely automatic heat regulation based on outside temperature.

The regulator automatically changes the starting time of the system each morning in accordance with every change of outside temperature. During the day it operates the system often enough and long enough (as guided by outside temperature) to maintain an even, comfortable inside temperature. At night it automatically shuts down the system, in accordance with outside weather.

The unit may be used for multiple occupancy of buildings and even in smaller buildings down to two-family apartments.

TRANSPARENT GLASS BUILDING BLOCK

The development of a transparent glass building block that affords almost window-like vision has

has been announced by Pittsburgh Corning Corp., Grant Building, Pittsburgh, Pa. The new block, called the "Vue" glass block, was developed for specific needs where some outside vision is desired through panels of non - transparent glass blocks. The new block permits sufficient general vision of large objects or movements beyond the panel to prevent a "shut-in" feeling sometimes experienced in windowless plants and in factories where obscure glass has been used. The "Vue" blocks can be inserted in panels of conventional glass blocks.

SEMI-SATURATED LINING FELT

The Floor Division of Armstrong Cork Co., Lancaster, Pa., has announced the production of an improved, semi-saturated lining felt said to have high resistance to splitting caused by seasonal sub-floor movements. The increased flexibility of the Lining Felt minimizes necessary rolling. An ordinary linoleum knife is the only tool required for its cutting and fitting.

The fibres in the product are partially impregnated with asphalt, and linoleum paste can penetrate it only deeply enough to assure a maximum bond. The company states that the new felt offers increased resistance to disintegration and bunching when installed over floors subject to severe foot traffic or the constant rolling of office furniture.

DECIMAL EQUIVALENT WALLCHART

A new giant size decimal equivalent wall chart, 26 by 39 inches in size, is available from The Frederick Post Co., 3650 N. Avondale Ave., Chicago, Ill. The chart is printed in large heavy type, 1¼ inches high, which can be easily read 50 feet away. It is printed in two colors (red and black on a white background). The chart brings all the equivalents from 1/64 to 63/64 within easy reading distance of the draftsman.

COPPER FLASHING SUBSTITUTE

To aid the building industry which will be prohibited from using sheet copper for flashing after December 31, The Cheney Co., Ardmore, Pa., has developed a new flashing metal known as Pitch-On-Metal. By using a ferrous metal core and completely enclosing it in a baked-on, coal-tar pitch enamel, experiments have shown that the results obtained were extremely satisfactory.

Tests led to the firm's adoption of Pitch-On-Metal for the manufacture of thru-wall flashing. After December 31 the firm will make flashing of copper for government use only, and will make flashing of Pitch-On-Metal for private and government construction use. The metal can be furnished without priorities for defense and non-defense construction.

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PROTECT THE HOUSES you build against the vexatious and destructive binding, swelling and warping that beset ordinary sash, doors, millwork, etc. . . . TREAT WITH LAUX REZ, the scientific sealer and wood preservative.

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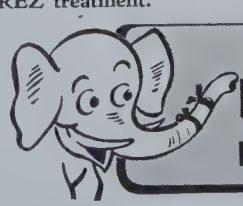
Today, many government projects are requiring this treatment as low cost "life insurance," and the growing practice in jobs, large and small, is to specify this inexpensive LAUX REZ treatment.



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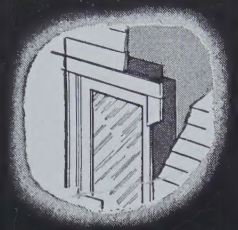

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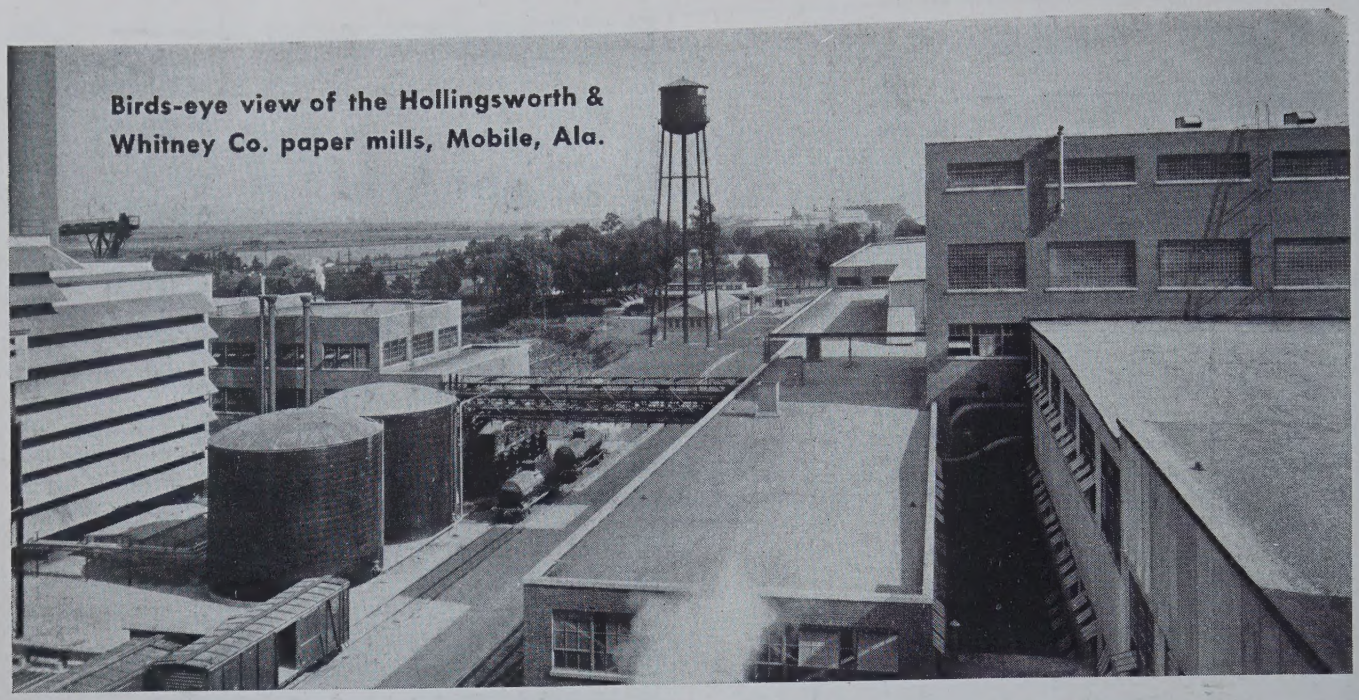

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9,300 sq. ft. Ruberoid Eternit Timbertex Asbestos-Cement Shingles
2,600 sq. ft. Ruberoid 63 lb. Eason Flap Roll Roofing

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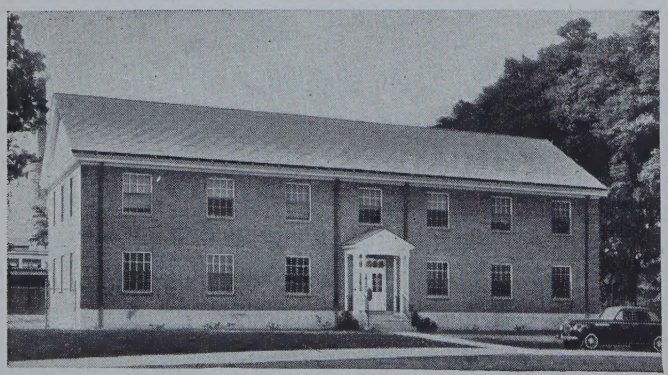
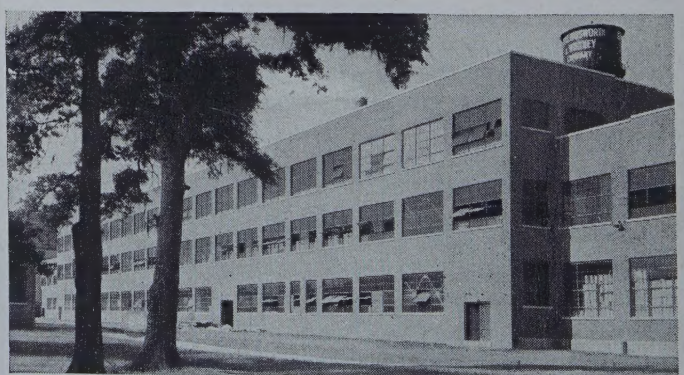
When you have a job on the boards where roofing counsel is desired, call in a Ruberoid engineer. His services are free. Because the Ruberoid line is complete, his recommendations are unbiased. For popular specifications, consult Sweet's. For complete specifications, write us on your letterhead please. Address The Ruberoid Co., 500 Fifth Avenue, New York, N. Y. Department PP-12.

(Below, left) Mobile office building, protected with Ruberoid Eternit Timbertex Asbestos-Cement Shingles. *(Right)* Close-up of one new unit protected with Ruberoid Built-up Roofs. *Architects:* H. S. Ferguson, New York, N. Y., and Fay, Spofford, & Thorndike, Boston, Mass. *General Contractor:* Rust Engineering Co., Birmingham, Ala. *Approved Roofing Contractor:* Security Roofing Co., Mobile, Ala.





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ROOFING AND BUILDING PRODUCTS

Reg. U.S. Pat. Off.

You can't see it— *but it's there!*

● UNDER what may look like an ordinary clump of bushes, the Army can pack enough heavy artillery to hurl back a whole division. You can't see it — but it's there!

It's the same with the Trinidad Native Lake Asphalt in Barber Genasco Roofings. In what may look like ordinary asphalt, Barber includes just the right amount of Trinidad to issue a supercharged challenge to any kind of weather that comes along. You can't see it — but it's there!

Trinidad Native Lake Asphalt definitely contributes to the quality of an asphalt roof. It increases toughness and durability. It adds ductility and self-healing properties that are particularly valuable in a built-up roof.

And yet, even with this plus-value feature that no other roofing can offer, Barber Genasco Roofs are sold at competitive prices. Isn't it good sound judgment to specify the roof that gives much more for the same amount of money?

Barber Trinidad Built-up Roofs — either slag or smooth-top — can be bought with 10, 15 and 20 year Bonds. Barber also manufactures other types of built-up roofings to meet every requirement. Your near-by Barber dealer or applicator has all the facts. You'll find his name in your local classified telephone directory. Barber Asphalt Corporation, Barber, New Jersey.

BARBER PRODUCTS

BARBER

MEANS A GOOD ROOF!

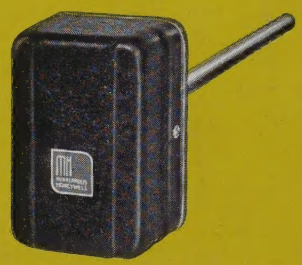
INDUSTRIAL AIR CONDITIONING

DEMANDS *Precision* CONTROL

WHETHER you are planning an air conditioning system for comfort or for industrial processing, you need precision automatic controls. Air conditioning can be no better than its controls, for it is the controls that make the system automatic—and it is the controls that enable it to deliver the results for which it was designed. Properly engineered precision controls, therefore are just as important as the air conditioning equipment itself.

Minneapolis-Honeywell manufactures the most complete line of temperature and air conditioning controls in the world. There is a control especially designed for every job. Minneapolis-Honeywell is the only manufacturer making both pneumatic and electric controls, and is therefore in a position to recommend either type, or a combination of both, with the entire system a co-ordinated unit. In any air conditioning system, look to the controls as well as to the mechanical equipment. The M-H engineer in or near your city will gladly assist in any control problem, without cost or obligation.

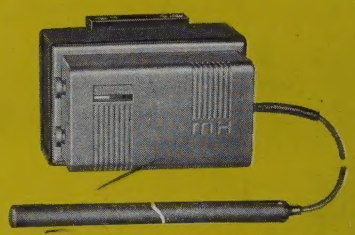
Minneapolis-Honeywell Regulator Co., 2739 Fourth Avenue S., Minneapolis, Minnesota. Canadian Plant: Toronto, Ontario. European Plant: London, England. Company owned branches in forty-nine other cities.



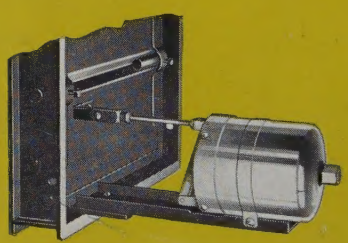
MASTER *THERMOSTAT*

GRADUSTAT

SUB-MASTER *THERMOSTAT*

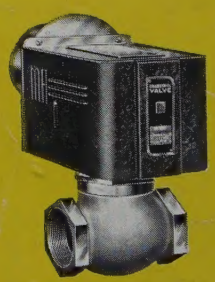


GRADUSTAT *(REMOTE)*



GRAD-U-MOTOR

MODUTRON



GRADUTROL VALVE

Play Safe! USE

MINNEAPOLIS-HONEYWELL

Control SYSTEMS